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SURVEY AND ANALYSIS OF SURFACE WARFARE OFFICER CAREER PATH ISSUES

by

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Surface Warfare Officers (SWO) attending the Naval Postgraduate School were surveyed on career issues pertaining to career path specialization, warfare skills, SWO qualifications, and their impact on readiness. Survey results indicate that: (1) SWO technical competency does not mandate specialization as a means to enhance readiness, (2) assigning department heads to single 30+ month tours and/or rotating them to provide officer continuity through work-up and deployment may enhance readiness, (3) implementation of SWO qualification policy may not be supporting adequate qualification standards. Recommendations include: (1) analyses of officer perceptual attitudes and viewpoints should be part of policy formulation, (2) feasibility and readiness impact studies of alternative department head assignment rotation and tour length policies should be completed, (3) revisions to the methods used to

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Survey and Analysis of Surface Warfare
Officer Career Path Issues

by

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ABSTRACT

Surface Warfare Officers (SWO) attending the Naval Postgraduate School were surveyed on career issues pertaining to career path specialization, warfare skills, SWO qualification, and their impact on readiness. Survey results indicate that: (1) SWO technical competency does not mandate specialization as a means to enhance readiness, (2) assigning department heads to single 30+ month tours and/or rotating them to provide officer continuity through work-up and deployment may enhance readiness, (3) implementation of SWO qualification policy may not be supporting adequate qualification standards. Recommendations include: (1) analyses of officer perceptual attitudes and viewpoints should be part of policy formulation, (2) feasibility and readiness impact studies of alternative department head assignment rotation and tour length policies should be completed, (3) revisions to the methods used to implement SWO qualification requirements should be examined.

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I. INTRODUCTION

The primary mission of the peacetime Navy is readiness. Readiness is a complex problem with many variables. Each variable must contribute if sufficient readiness is to be achieved. This interdependence suggests that readiness is constrained by the contribution of the weakest variable. In recent years the ability of the surface warfare officer (SWO) community to adequately contribute to readiness has been questioned. Inadequacies in the preparation of SWOs and the structure of the community may be constraining readiness.

Surface warfare officer management policy pertaining to career path specialization, assignment rotation and tour length, and qualification issues may not best support readiness because SWO perceptions of policy and its perceived impact in the fleet were not adequately evaluated and integrated into the policy development process. Formulation of SWO career path policy best supports officer management policy objectives and therefore readiness, when the evaluation of SWO perceptions are integrated into the policy development process.

The objective of this thesis is to provide an analysis of officer perceptions regarding policy issues with the intent that revisions to policy, incorporating analysis

results would more effectively contribute to readiness and officer management goals. With regard to future policy development, comprehensive measurement and analysis of SWO perceptions relevant to policy formulation has several advantages. It may reveal expectations acceptance regarding SWO policy alternatives under consideration. If these perceptions can be identified during the formulation of policy concepts, community managers can use this information to develop policy that more effectively meets community managers' goals. Analysis can also provide a needed source of policy evaluation from the fleet perspective prior to implementation.

A. PURPOSE

The purpose of the research is to survey and analyze officer perceptions of career path specialization, assignment, and qualification issues. The merits of alternative career path specialization policies will be evaluated with regard to SWO perceptions of their relative benefit to the Navy and their relative compatibility with officer career goals. The perceived relationships between officer professional attributes and career path specialization and readiness will be examined. Department head assignment policy will be examined to determine if SWOs believe alternatives to the fixed tour length and rotation policies would better support readiness. The perceived

adequacy of the SWO qualification system will be examined to determine if its structure and implementation support perceived minimum fleet requirements and support adequate performance and qualification standards.

B. THESIS STRUCTURE

The introduction presents the problem and states the objectives and purpose of the analysis. The following chapter presents hypothesis development within the review of literature. The third chapter, the research methodology, is a chronology of the survey development, data collection, demographic summary, data analysis, and development of the analytic tools implemented to test the hypotheses. The fourth chapter presents results of the hypothesis testing. The fifth chapter is a discussion of the hypothesis test results and the final chapter presents the analysis summary and conclusions.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Generalized hypotheses were formed to provide the basis for construction of the survey. Within each generalized hypothesis, sub-hypotheses were defined to test the generalized hypothesis. These sub-hypotheses were constructed to test issues, alternatives, risks, benefits and other factors relevant to the testing of the generalized hypothesis.

A. CAREER PATH SPECIALIZATION

Traditionally, the SWO has been a "jack of all trades" who must be prepared to fight in each of the three environments of naval warfare; on the sea, under the sea, and above the sea. In addition to warfare competency at the interface of the three environments, a SWO was expected to master naval engineering, weapons systems, communications, repair, damage control and administration to name a few. However, the complexity and technology of modern naval warfare may have made this philosophy obsolescent. As a result, there has been increasing emphasis to identify and implement the changes necessary to restructure the community and better prepare SWOs to meet the readiness challenges of modern naval warfare.

In 1983 the SWO career path was restructured in an effort to redress the perceived inadequacies in officer training and assignment policies. A primary objective of the policy changes was to increase readiness by utilizing SWOs in the same specialty area for their department head assignments. It was believed that increased officer technical competency and greater specific assignment experience derived through specialization would result in increased levels of readiness. [Ref. 1:pp. 1-4]

As shown in Figure 1 [Ref. 1:p. 2], the policy has three distinct layers. At the division officer level the prospective SWO gains a general warfare background by rotating through division officer assignments in at least two different departments aboard his first ship. Based on his division officer background and performance, the qualified SWO is then tracked to a specific departmental area for his department head tours. Finally, the post department head SWO is given additional training prior to executive officer (XO) assignment to insure he has the necessary broad-based generalized competencies to function effectively as an XO and later as a commanding officer (CO).

Three feasible alternatives exist on which department head specialization may be structured. The adequacy of each alternative is assumed to be a function of two variables. The first variable is the evaluation of each specialization alternative with regard to its compatibility with personal

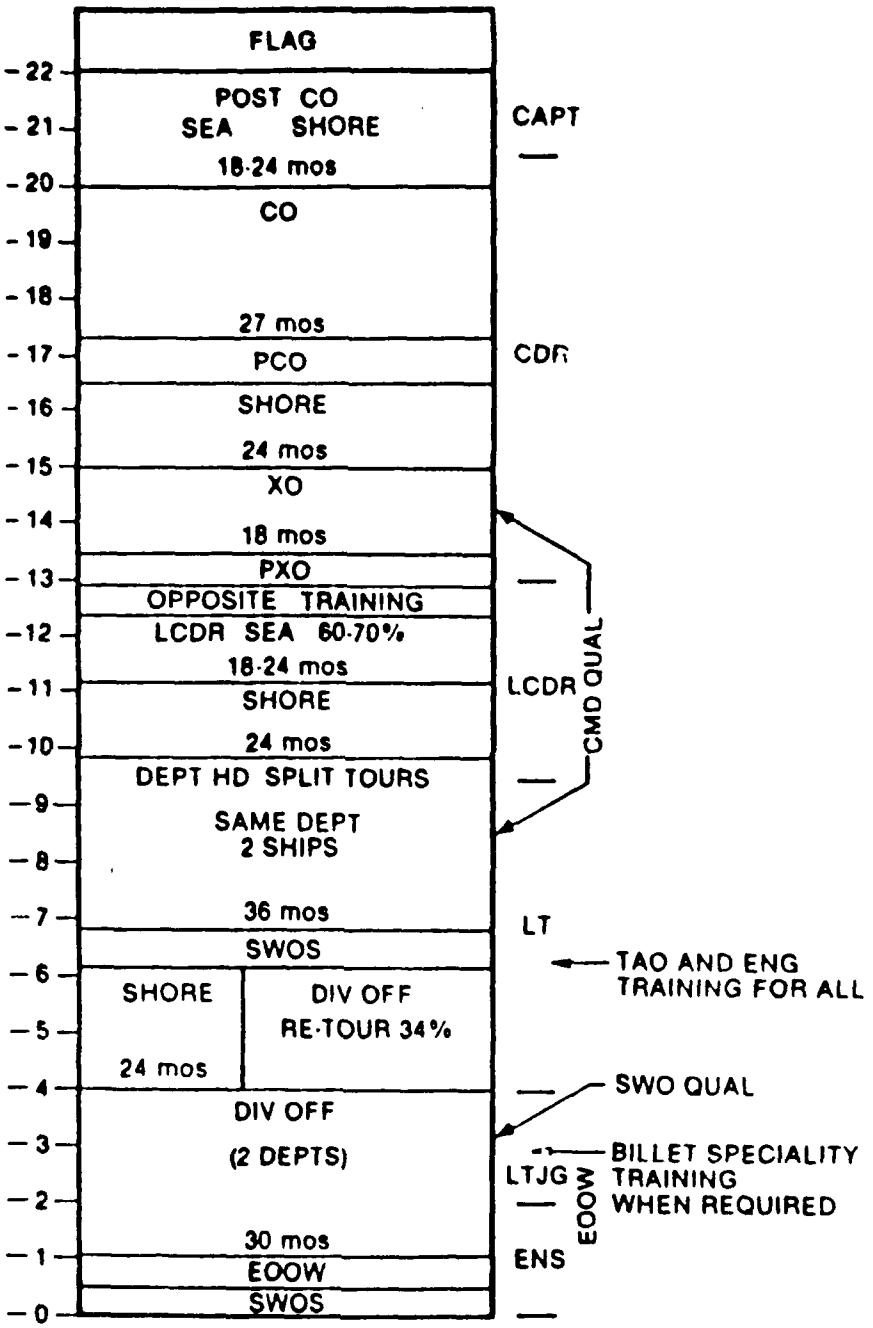


Figure 1. New SWO Career Path

career goals. It is assumed that specialization compatibility with career aspirations is a critical implementation issue. The second variable is the perceived benefit to the Navy of each specialization alternative.

Specialization by department is the first alternative. This is the structure currently implemented and described above. Within this structure, department heads would be assigned exclusively to one departmental area (Operations, Weapons/Combat Systems/Deck, Engineering) for their department head tours. Under this alternative, a department head would be assured of rotation within a departmental area but not within a specific warfare area. For example, an operations specialist might find himself assigned to a combatant for his first tour and an amphibious force ship for his second tour.

Specialization by warfare area was the second alternative approach examined. Within this structure, two warfare tracks are designated. The first incorporates amphibious warfare, combat logistics and mine warfare while the second track incorporates all forms of combatant warfare. Under this alternative a department head would be assigned in the same warfare area for each tour but would not necessarily be assigned to the same departmental area. For example, an amphibious warfare specialist might find himself assigned as an engineering department head on his first tour and as an operations officer on his second tour.

The third alternative is an above decks/below decks split of career paths [Ref. 2:p. 98]. Prior to department head assignment, qualified SWOs would be split into one of two career paths. Officers tracked as engineering and material specialists, the below decks track, would have a separate career path without the opportunity for command at sea. However, under this alternative they would be assured of equivalent advancement and promotion through an expanded engineering career path. They would advance through engineering and material specialist sea assignments while shore assignments would consist of rotation through repair organizations, material commands, and acquisition assignments. All other SWO's would be assigned to the more traditional above decks track that would lead to command at sea and operational oriented shore assignments. The merits of this specialization alternative are discussed in Swinger [Ref. 2:pp. 98-100].

1. Hypothesis 1

The null hypothesis states that each specialization approach is equally beneficial to the Navy and compatible with career goals. To implement this test, three sub-hypotheses were defined which compare the perceived benefit to the Navy with the perceived compatibility with career goals for each of the three alternatives.

2. Hypothesis 2

The objective of this hypothesis is to determine which of the three specialization alternatives, defined in Hypothesis 1, is perceived to be most beneficial to the Navy. The null hypothesis states that each specialization alternative is equally beneficial to the Navy. Three sub-hypotheses were defined that test the three specialization alternatives pair-wise with regard to perceived benefit to the Navy.

3. Hypothesis 3

The objective of this hypothesis is to determine which of the three specialization alternatives is perceived to be most compatible with career goals. The null hypothesis states that each specialization alternative is equally compatible with career goals. Three sub-hypotheses were defined that test the three specialization alternatives pair-wise with regard to their perceived compatibility with career goals.

4. Hypothesis 4

A major goal of specialization at the department head level is to increase readiness. It is believed that greater department head technical and managerial competency derived through specialization would significantly enhance readiness. [Ref. 1:p. 2] If respondents support specialization at the department head level for these reasons then they should perceive that technical and

managerial competencies are more important to the department head than to the division officer. For the purposes of the research, importance was defined in terms of two variables. They are first, the degree to which the competency is critical to job performance and second, the degree to which the competency contributes to ship's readiness.

The null hypothesis states that technical and managerial competencies are as important to the division officer as they are important to the department head. To implement this test, the criticality to job performance of each competency of the department head versus that of the division officer was tested and the contribution to ship's readiness of each competency of the department head versus that of the division officer was tested. The result is four sub-hypothesis tests for implementing the null hypothesis. If testing reveals that these competencies are more important to the department head than to the division officer, it will be concluded that respondents believe specialization at the department head level is perceived to be justified because technical and managerial competencies are more important to the department head than to the division officer.

5. Hypothesis 5

For the purposes of the survey and analysis, four officer professional attributes were defined. In addition to technical competency and managerial competency,

leadership skills and tactical/watchstanding skills define the set attributes. These attributes are assumed to be the inclusive set of most important SWO professional attributes. The objective of the hypothesis test is to determine if respondents believe technical and managerial competencies are the attributes of the department head that contribute most to ship's readiness. The null hypothesis states that for a department head, the contributions to ship's readiness of managerial and technical competencies are equal to those of other professional attributes. The five sub-hypothesis tests compare the attributes pair-wise with regard to contribution to ship's readiness.

If technical and managerial competencies are believed to contribute more to ship's readiness than do leadership skills and tactical/watchstanding skills, it may be concluded that the respondents believe specialization policy is justified. Rejecting the null hypothesis does not necessarily imply that specialization policy is not believed to be justified. It implies only that perceptions of technical and managerial competencies do not mandate specialization. In this case identifying the basis for respondent support of specialization and evaluation of other policy proposals designed to increase readiness should be given greater weight.

6. Hypothesis 6

The objective of this hypothesis is to evaluate the perceptual relationships between the criticality to job performance and the contribution to ship's readiness of the four department head professional attributes. The null hypothesis states that each of the department head's professional attributes contribute as strongly to ship's readiness as they are critical to job performance. Four sub-hypothesis tests were defined that test the contribution to ship's readiness against the criticality to job performance for each attribute. Determination of the strength and direction of these relationships may significantly contribute to the development of officer related policy whose purpose it is to enhance readiness.

7. Hypothesis 7

The null hypothesis states that specialization implemented at the department head level would benefit fleet, material and combat readinesses equally. Each pair-wise combination of the three readinesses are sub-hypotheses to be tested with regard to implementation of specialization policy.

The objectives of the hypothesis test are to determine, free of the professional attributes issue, if specialization would significantly benefit readiness and which aspects of readiness would be perceived to be most influenced by specialization. In addition to the hypothesis

testing of the readiness aspects of specialization, the analysis will also include an evaluation of the perceived impact of specialization on future CO/XO effectiveness. While specialization may enhance readiness it may, in the future, tend to produce COs and XOs who are less effective because they do not have the broad expertise and experience required for these assignments [Ref. 3:p. 5].

B. DEPARTMENT HEAD TOUR LENGTH AND ROTATION

Department head tour length and rotation policy is another related readiness issue [Ref. 4:pp. 19-22]. Currently, most department heads are assigned to two 18 month split tours while a much smaller percentage are assigned to 30+ month single tours. The fixed time interval policy implies department heads are often rotated during critical training and operational periods. During these periods, re-assignment of department heads, who are assumed to be critical to the functioning of the ship's combat system, may disrupt the development and alter the effectiveness of the combat team.

1. Hypothesis 8

Department head tour length may greatly influence readiness. Respondents may believe that, compared to split touring, a single long tour would tend to promote significantly higher levels of readiness. The null hypothesis states that relative to split touring, a single

30 month tour would not promote significantly higher levels of fleet, material or combat readinesses. Each pair-wise combination of the three readinesses are sub-hypotheses to be tested with regard to split touring versus the longer single tour.

Two other relevant aspects of department tour length will also be evaluated. First, the author contends that split touring may not be providing the necessary training opportunities in an 18 month assignment that are required to develop the warfighting proficiency aboard the particular platform to which the officer is assigned whereas longer touring may result in more training opportunities from which the department head may gain increased warfighting proficiency. Second, in the SWO community, sustained superior performance is critical to career advancement. It is assumed that less than superior performance in a single long tour may be an unrecoverable setback to an officer's career. However, split tours allow an officer a second opportunity to demonstrate superior performance following a less than superior first tour assignment. Therefore, respondents may perceive that a longer single tour subjects the department head to greater career risks.

2. Hypothesis 9

This and the following hypothesis focus on department head assignment continuity and its impact on deployed combat readiness (DCR) [Ref. 4:pp. 19-22]. A

likely alternative to the fixed time interval department head rotation policy is a policy that details department heads according to a ship's schedule. Under this alternative rotation policy proposal, department heads would not normally be re-assigned during the pre-deployment work-up cycle and the subsequent deployment. The objective of the proposal is to insure department head assignment continuity from the beginning of the work-up cycle through deployment. Department heads would be scheduled for rotation following deployment and prior to the following work-up cycle.

The null hypothesis states that the proposed rotation system would have little impact on ship's deployed combat readiness. Two sub-hypotheses were defined to test the hypothesis. First, the perception that such a system would tend to significantly increase ship's DCR was tested against the perception that rotation of department heads in the work-up cycle or during deployment has little impact because DCR is most heavily dependent on other factors. Second, the perception that such a system would tend to significantly increase ship's DCR was tested against the perception that the proposal would have little effect because ships now deploy as combat ready as is humanly possible. In addition to providing analysis of the proposal's impact on DCR, the analysis of the sub-hypothesis tests should give valuable insight with regard to the

perceived dependency of DCR on department continuity and perceptions of current DCR. The proposal's perceived impact on officer retention will also be evaluated.

3. Hypothesis 10

The null hypothesis states that the proposed rotation system would need to be expanded beyond the department head level to significantly impact DCR. The sub-hypotheses test the perception that the proposal would significantly increase ship's DCR against the perception that the proposal would need to be expanded beyond the department head level to significantly impact DCR.

Expanding the proposal beyond the department head level is assumed to be infeasible. In this case it is assumed that a command's ability to effectively meet its obligations when not in work-up and deployment would be unacceptably degraded by concurrent re-assignment of large numbers of ship's personnel.

C. SWO TRAINING AND QUALIFICATION

The surface warfare officer training and qualification system may not be consistently producing officers with the qualifications necessary to adequately meet the needs of the fleet. The prospective SWO usually reports aboard his first ship with six to nine months preparatory training. While this training is valuable and necessary it is heavily classroom oriented and generic in nature due to the variety

of platforms and missions in the surface navy. The newly reporting officer is immediately assigned primary division officer and collateral duties and tasked to qualify as a surface warfare officer. More often than not the officer finds himself so inundated with his duties that pursuing warfare qualification becomes a subordinate priority and skills acquired in preparatory training languish. In many cases this problem is often compounded by inadequate shipboard officer qualification programs. [Refs. 5:pp. 34-40; 6:pp. 32-35]

OPNAV instructions give a commanding officer (CO) a large measure of leeway in defining the scope and implementing his officer qualification program [Ref. 7:pp. 1-2]. Consequently, the author contends that these programs tend to be narrowly focused on the particular platform and mission areas of the particular ship and too little priority is given to exposing prospective SWO's to other communities, ships and warfare areas. By instruction, CO's are encouraged but not required to provide this exposure to their junior officers [Ref. 7:pp. 1-2]. It is also believed that, as a rule, this cross training is not effectively implemented because it takes the junior officer away from his division officer and collateral duties. The end result is a training program that may tend to produce narrowly qualified SWO's who lack the qualifications the fleet requires.

The quality of SWO's produced may even vary between identical ships with the same mission areas because the level of performance and expertise required to obtain qualification varies with each ship's officer qualification program [Ref. 6:pp. 32-35]. Just as a command defines the scope of its officer qualification program it also sets the personal qualification standards which junior officers must meet.

In summary, the apparent inconsistencies in the quality of SWO's produced by the training and qualification system are most likely a consequence of a failure within the community to establish personal and fleetwide standards for SWO qualification. Specialization policy, in part, hinges on the development of uniformly competent, well-rounded and experienced SWO's prior to department head assignment [Ref. 1:p. 1] . Well-rounded and effective SWO training and qualification programs will become increasingly critical to the preparation of SWO's for command as the trend toward greater specialization continues.

1. Hypothesis 11

Officer qualification programs implemented aboard most ships consist of three components. They are the SWO Personal Qualification Standards (PQS) system, close observation of prospective SWO performance and expertise, and oral qualification boards. OPNAV Instruction 1412.2C delineates minimum qualification eligibility and

requirements. Due to the variety of platforms and mission areas in surface warfare, this instruction also gives the individual command great latitude in establishing qualification requirements.

The SWO PQS system serves as the fleetwide framework for officer qualification. A complete discussion of the PQS system is contained in OPNAV Instruction 3400.34C. For the purposes of this research, it is assumed PQS primarily serves four purposes. First, PQS is a learning tool the prospective SWO uses to gain basic warfare background and experience. Second, it is a fleetwide minimum standard for SWO qualification requirements. Third, within the guidelines of OPNAV instructions, PQS is a flexible tool which individual commands adapt to suit their SWO qualification requirements [Ref. 7:pp. 1-2]. Fourth, PQS provides a documentation tool to chart SWO qualification progress.

The fleetwide variability in PQS implementation and in its perceived purposes, together, significantly influence the ability of the SWO community to consistently produce uniformly competent and qualified SWO's [Ref. 6:p. 33]. The purpose of this hypothesis is to determine which of the purposes the PQS system best suits. In addition to determining the perceived real value of PQS, the rank ordering of PQS purposes should also give insight into the variability of its implementation.

The null hypothesis states that SWO PQS serves equally s: (1) a tool the prospective SWO uses to gain background warfare experience, (2) a sufficient fleetwide standard for the minimum level of warfare qualification required of a SWO, (3) a flexible tool individual commands adapt to suit their qualification requirements, and (4) a tool with which to document qualification progress. Six sub-hypotheses compare pair-wise each of the four perceived purposes.

2. Hypothesis 12

This hypothesis examines the qualification system with regard to qualification standards. Two types of standards are assumed to be relevant to SWO qualification. The first is the perceived minimum qualification criteria the fleet requires and the second is the system's perceived sufficiency as a minimum personal performance and expertise qualification standard.

The null hypothesis states that the present SWO qualification system meets the minimum qualification criteria the fleet requires and equally sets sufficient SWO performance and expertise qualification standards regardless of whether or not standardization of requirements for SWO qualification is a relevant issue. Three sub-hypotheses are defined to implement the hypothesis test. The first compares the two types of standards while the following two compare each type of standard to issue relevancy.

3. Hypothesis 13

The purpose of the hypothesis test is to evaluate responsibility for SWO warfare training. Warrior skills are defined to be those officer skills critical to the direct management of the combat system and other systems in executing a ship's combat missions. The individual SWO, the ship's CO and the Navy are the three levels of responsibility assumed to be relevant to warrior training [Refs. 4:pp. 19-22; 5:p. 40; 8:p. 22]. The allocation of limited resources versus competing priorities is the essential issue for each of the levels of responsibility.

The null hypothesis states that the individual SWO, ship's CO and the Navy are equally responsible for training SWOs to be warriors. The six sub-hypotheses are pair-wise comparisons of the four following perceptions of responsibility. First, it is the individual responsibility of a SWO to not only do his job but also prepare himself to be a warrior. Second, it is the responsibility of a ship's CO to train SWOs to be warriors above all else. Third, the Navy should be as dedicated to SWO warfare training as it is to damage control, material readiness, enlisted training, etc. Fourth, SWO qualification is a personal goal to be attained by every SWO according to his own faculties and should not be relegated to the programmed locked-step mode characteristic of other ship's training programs.

Analysis should reveal the strength of perceptual relationships and identify the responsibility area(s) perceived to be the most able to bear the opportunity cost of increased officer warfare training given limited resources.

4. Hypothesis 14

Fleetwide examination of prospective SWOs as an additional requirement for SWO qualification appears to be a feasible method for establishing a fleetwide standard for SWO qualification. Under this proposal, a prospective SWO would only be allowed to take the exam with his CO's permission and only after meeting all other requirements his CO may have. A discussion of the exam proposal is contained in James [Ref. 6:p. 34].

The null hypothesis states that a fleetwide SWO qualification exam would serve to set a minimum standard of warfare qualification regardless of whether or not an adequate standard now exists. Three sub-hypotheses are implemented to test this hypothesis. The perception that an exam would serve to set an adequate minimum qualification standard was tested against the following perceptions. First, the present qualification system sets adequate minimum fleet criteria. Second, the present qualification sets adequate expertise and performance qualification standards. Third, SWO PQS sufficiently standardizes the minimum level of warfare qualification.

The purpose of the hypothesis test is to evaluate the perceived effectiveness of an exam relative to the perceived effectiveness of the present system in setting minimum qualification standards.

5. Hypothesis 15

The objective of this hypothesis is to determine the feasibility of implementing a fleetwide exam. The issue here is implementation because an exam must in some manner account for the diversity of the community but not be so generalized that it fails to be rigorous.

The null hypothesis states that a fleetwide SWO qualification exam could not be effectively implemented due to the diversity in the subject area. The sub-hypothesis tested was that an exam would serve to set an adequate minimum standard for SWO qualification versus an exam could not be successfully implemented because of the diversity in the subject area.

Exam implementation is critical to its perceived ability to set minimum qualification standards because its content and structure will greatly influence perceptions regarding standards of qualification.

6. Hypothesis 16

The purpose of this hypothesis is to evaluate perceptions of two proposed structures for the exam's implementation. It is assumed that a single exam covering, in detail, every aspect of surface warfare is not a viable

alternative. The two structures are a multiple-versioned exam and a narrowed single exam [Ref. 6:p 34].

A multiple-versioned exam would consist of several exams that covered all aspects of surface warfare relevant to particular types of platforms and mission areas. The prospective SWO would sit for the particular exam associated with his platform type and mission areas. The advantage of this structure is that all aspects of surface warfare from administration and repair to tactics and system's capabilities could be covered for each applicable test version. The disadvantages of this structure are that versions would tend to ignore detailed examination of other platforms and missions while the perception that it would set fleetwide qualification standards is questionable.

A single exam would focus on a narrow set of topics applicable across all platforms and missions. For the survey, this exam alternative was defined to include warfare skills, tactics, systems and capabilities while covering only the basics of engineering, damage control, administration and repair. The advantage of this structure is that it would more likely be perceived to set minimum qualification standards because it covers the entire fleet. The disadvantage is that its structure would not examine, in detail, broad areas of surface warfare that are equally critical to SWO competency.

The null hypothesis states that a multiple-versioned exam which accounted for the variety of platforms and mission areas would not be preferable to a single exam focused on a narrowed field of topics. Each structure was explained in detail on the survey.

III. RESEARCH METHODOLOGY

Survey construction was completed following the identification of relevant issues, development of hypotheses and identification of other factors relevant to the research. The survey was divided into four areas. Section A covers career path specialization. Section B covers career path specialization with regard to readiness considerations, SWO tour length and rotation, and officer professional attributes. Section C covers SWO qualification and training. Section D covers the demographics of the sample group relevant to the research.

Appendix A is a copy of the survey as distributed to the respondents. Each numbered question is an item and henceforth will be referred to by item number. The survey is composed of two item types. The first item type are ordinal scales and require that the respondent mark one or more answers as specified by the directions. These items are primarily contained in Section D. Examples of this type are Items 40 and 44.

The second item type are statements that respondents are instructed to respond to using a seven-point Likert scale. The seven-point scale assumes an equal interval continuum from 1 (very low/strongly disagree) to 7 (very high/strongly agree). The 4-digit of the scale represents a neutral or

moderate position. This scaling technique is simple, easily manipulated, powerful and is best suited to applications where attitudinal or issue position measurement is required.

Following survey construction, a pilot study was completed. The purpose of the pilot study was to evaluate the mechanics of the survey, check for biases, and ensure that the content of the survey was complete. Each member of the pilot study group completed a survey, completed an attached questionnaire, and was interviewed. Pilot study subjects were picked from a range of demographic variables assumed to be relevant to the population. The pilot study indicated that survey content was complete and unbiased. Minor re-wording of the directions and two items was completed and the survey was released.

All SWOs attending the Naval Postgraduate School (NPS) comprised the population. A survey was delivered to every SWO assigned as a student to NPS except those newly arriving students who had not been entered in the command's data base with a valid student mail code. Of the 235 surveys delivered, 154 were returned, and 153 surveys were entered into the data base constructed for the analysis. One survey was rejected because it was not sufficiently completed. The valid response rate was in excess of 65% of the entire population. Survey data entry was completed in a fixed record length format and random cases were screened for accuracy. No errors were found.

Generalizing the analysis to the entire community is not a goal of the research because it was not possible to acquire the data neccessary to statistically compare the distribution of the NPS SWO's to the distribution of SWO's in the community. Other organizations better possess the resources and data base access required to accomplish this. It is assumed, therefore, that the distribution of NPS SWO's does not closely approximate that of the entire SWO community in several respects. Senior officers, very junior officers and active duty reservists are not represented. Surface warfare officers with amphibious warfare, nuclear power and combat logistics force backgrounds are most likely under-represented. The value of the research should be viewed from the perspective of presenting relevant and possibly fresh insight into officer career path issues and readiness through the perceptions of the officers most effected by the issues examined.

The issues examined pertain entirely to the division officer and department head career time frame for the majority of SWO's who follow the standard SWO career path. The survey group is composed almost entirely of post division officer and post department head SWO's. Therefore respondents well represent the cross section of the community most directly affected by the issues which are the subject of the research. The post department head officers bring to the survey the perspectives of current department

head experience while the post division officer SWO's bring to the survey current division officer perceptions and the perspectives of those who will soon be filling department head assignments.

The breakdown of the sample group by years of commissioned active duty (Item 41) is presented in Table 1.

TABLE 1

BREAKDOWN BY YEARS OF COMMISSIONED ACTIVE DUTY

Years	Frequency	Percent
less than 4	5	3.3
4-6	63	41.2
7	34	22.2
8-12	42	27.4
greater than 13	8	5.3
non-responses	1	0.7
	153	100.0

The majority of respondents, 90.8%, have between four and 12 years commissioned active duty. These are the mid-grade years in which most SWO's complete division officer touring and subsequently complete department head tours. The breakdown of the sample group by most recent sea assignment (Item 47) was that 63.4% of the repondents had most recently been to sea as division officers, 26.8% as department heads and 9.8% as executive officers or sea-going staff officers. The 90.2% whose most recent sea assignment

had been in division officer or department head billets closely approximates the proportion of respondents (90.8%) with four to 12 years active duty. The breakdown by rank (Item 40) also illustrates the heavy representation within the sample group of mid-grade SWO's. Lieutenants and lieutenant-commanders comprise 98% of those who responded. Demographic breakdown of the respondents across these variables confirms that the survey population is primarily composed of those officers for which the survey and its analysis were intended.

Table 2 summarizes the cumulative ship type assignment experience as division officers (Item 44) and, if applicable, as department heads (Item 45). Its purpose is to illustrate the preponderence of combatant tour experience of both division officers and department heads.

TABLE 2

CUMULATIVE DIVISION OFFICER AND DEPARTMENT HEAD ASSIGNMENT EXPERIENCE

Ship type	Division officer tours	Department head tours
amphibious	15	8
attack carrier	16	2
combat logistics	13	6
surface combatant	151	55
other	10*	10*

* MSO, ARS, ASR, PHM, AGF, AS, AD, AR, afloat staff

Of more importance to the analysis is the determination of how specialized the respondents perceive themselves to be. Table 3 presents the breakdown of repondent perceived specialization by warfare area (Item 2). They were asked to classify themselves as specialists in one of three warfare areas or classify themselves as strictly generalists.

TABLE 3

PERCEIVED SPECIALIZATION BY WARFARE AREA

Area	Frequency	Percent
amphibious specialist	4	2.6
combatant specialist	112	73.2
combat logistics specialist	3	2.0
strictly a generalist	32	20.9
other	2*	1.4*
	153	100.0

* mine warfare and PHM specialists

The majority of respondents perceive themselves to be specialized, particularly in combatant warfare. Actual tour experience as shown in Table 2 substantiates these perceptions. The ratios of perceived specialization by warfare area from Table 3 and the ratios of assignment experience by ship type from Table 2 do not reasonably approximate the composition of the fleet by ship type. The approximate ratios of combatatants to amphibious ships and combat logistics ships is approximately 5:2:1 respectively.

Therefore specialization within the sample group differs significantly from that which would be expected from the community as a whole.

Repondents were then asked if they perceived themselves to be specialized by department (Item 3). Table 4 presents the breakdown of perceived specialization by department.

TABLE 4

PERCEIVED SPECIALIZATION BY DEPARTMENT

Area	Frequency	Percent
combat systems/weapons specialist	42	27.5
deck specialist	2	1.3
engineer	46	30.1
operations specialist	31	20.3
strictly a generalist	32	20.9
	153	100.0

Almost 80% believed themselves to be specialized in a departmental area. Tables 3 and 4 indicate respondents perceive themselves to be highly specialized by both warfare area and department. Only 20.9% of the respondents believed they were generalists in one or both areas. Thirteen respondents (8.5%) indicated they were generalized by both department and warfare area while 51 repondents (33.3%) indicated they were generalized by either department or warfare area but not both. The remaining 89 respondents

(58.2%) considered themselves to be specialized by both department and warfare area.

Univariate statistics were computed for the variables in Sections A through C. In addition to the calculations of means, medians and standard deviations, histograms were plotted. The purpose was to get preliminary impressions of the data and decide how the analysis was to proceed. Correlation matrices were computed to examine other, possibly relevant, variable relationships not included in the hypothesis tests. Univariate analysis revealed that some distributions were highly skewed while in others, response data was almost uniformly distributed.

Scatterplots were constructed for all relevant variable pairings including those variables which were shown to have a significant positive or negative correlation. Analysis of Univariate statistics and examination of scatterplots indicated that matched pairing analysis was probably the most appropriate choice of analysis methods because many significant relationships shown in scatterplot examination could best be described deterministically through related samples analysis of perceptual differences. Items 6 and 7 are examples of this item type.

The distributions of most variables indicated that related samples analysis was the most appropriate methodology for hypothesis testing. Variable central values, means and medians, were very similar while variances

tended to be large. Appendix B presents a few of the variable univariate statistics as examples. Due to the subject-to-subject variability, these distributions tended to mask significant information that was readily apparent from examination of scatterplots. By matching responses to individuals the extraneous influences of the subject-to-subject variability was reduced. Therefore the significant relationships previously masked became more readily apparent while the distributions of differences more closely approximated normal distributions.

Statistics derived from sample pairing examine differences in responses for matched pairs and then determine if the observed differences are statistically significant. The most useful statistical tools for related samples hypothesis testing are the parametric paired t-test and its non-parametric equivalent, the Wilcoxon matched-pairs signed-ranks test (WMST). Both statistics were implemented in the analysis to give a clear and understandable interpretation to the widest range of readers.

Responses from the variables being tested from each respondent form the pairing scheme for hypothesis testing. The computed difference between response values for an individual is a case. The paired t-test requires that differences between matched responses must be measurable on at least an interval scale. The second requirement is that

these computed differences for all cases must be close to normally distributed. If these requirements are met, the sample mean of the differences, $\bar{d}$, and the sample standard deviation of the differences, σ_d, can be calculated and the paired t-statistic may be formed.

To calculate the paired t-statistic for matched pairs the difference variable, D, is determined for each case

$$D = R_a - R_b$$

where R_a is the Likert scale value for variable a and R_b is the Likert scale value for variable b. Now $\bar{d}$ and σ_d can be calculated and the t-statistic formed. If there is not a statistically significant difference between D and a hypothetical mean of 0, the null hypothesis that there is no difference is accepted, otherwise the null hypothesis is rejected indicating a real difference is present. The equation for the paired t-statistic is

$$t = \frac{\bar{d} - 0}{\sigma_d / \sqrt{n}}$$

with n-1 degrees of freedom, n is the number of cases and

$$\sigma_{\bar{d}} = \sqrt{(S_a^2 + S_b^2 - \frac{\Sigma(r_a r_b)}{n-1})/n}$$ [Ref. 9:p. 270].

Because the direction of the relationships could not be specified prior to analysis a two-tailed observed significance level, p, was used. The rejection criteria chosen for the hypothesis testing was the .05 significance level.

The Wilcoxon matched-pairs signed-ranks test (WMST) is a non-parametric procedure used for comparing paired samples to test the hypothesis that the distributions of R_a and P_b are the same. This procedure is based on the magnitudes and the directions of the differences and does not require any prior assumptions about the shape of the distributions only that it must be possible to rank the differences. This requirement is met by interval scaling. The null hypothesis essentially states that the difference of the sums of positive and negative ranks is equal to 0.

To implement this test the variable D is calculated for each case. The differences are then ranked ignoring the sign of the difference. If two or more differences are the same, the average rank for them is used. Now the rankings are multiplied by their respective signs and the sums of the positive and the negative ranks are determined. The statistic T is the smaller of the positive and negative rank sums. For large sample sizes the normal approximation for the distribution of T may be used where

$$Z = \frac{T - \mu_T}{\sigma_T}$$

T is approximately normally distributed with mean

$$\mu_T = \frac{n(n+1)}{4}$$

and standard deviation

$$\sigma_T = \sqrt{\frac{n(n+1)(2n+1)}{24}}$$ [Ref. 9:p. 273].

Since T is not dependent on the magnitude of the differences but only on their ranks, a prior distribution need not be specified. Thus the test is non-parametric. The observed significance level, p, corresponding to the calculated Z value for a two-tailed standard normal distribution is extracted and the decision to reject or accept is made.

For large sample sizes, the t distribution closely approximates the normal distribution. Samples sizes were universally greater than 145, therefore the normal approximation of the WMST is an equivalent measure to the t-statistic. The observed significance level, p, is the probability that a difference at least as large as the one observed would have arisen if the means were really equal. A two-tailed probability was used because the direction of the test could not be specified prior to analysis. The

rejection criteria chosen for comparison with the p-value was the .05 significance level.

While the parametric paired t-test is generally the more efficient and more familiar test, the WMST was included in the analysis for two reasons. Together, the paired t-test and the WMST give the reader two statistics that measure the same relationships but are computed in different ways with differing prior assumptions. Second, the statistical package chosen for the analysis, SPSS-X, also determines the numbers of positive and negative differences and the numbers of cases where the differences were 0, denoted as ties, for the WMST. This gives the reader a third measure with which to evaluate the significance of the relationships.

IV. HYPOTHESIS TEST RESULTS

A. LISTING OF HYPOTHESIS TEST RESULTS

1. Hypothesis 1

The hypothesis tests the perception that respondents believe each of the specialization approaches are as equally beneficial to the Navy as they are compatible with their career aspirations. Table 5 summarizes the results.

The hypothesis was accepted for the departmental specialization approach. Respondents believe departmental specialization would be as beneficial to the Navy as it would be compatible with career aspirations. If the null hypothesis is true, there is a .59 probability for the t-statistic and a .63 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed. The null hypothesis was also accepted for the warfare area specialization approach. Respondents believe warfare area specialization would be as beneficial to the Navy as it would be compatible with career aspirations. If the null hypothesis is true, there is a .11 probability for the t-statistic and a .12 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

The hypothesis was rejected for the separate engineering career path approach. Respondents believe the

TABLE 5

HYPOTHESIS 1

Ho: Each specialization approach is equally beneficial to the Navy and compatible with career goals.

SPECIALIZATION APPROACH	CAREER GOALS (CG)	BENEFIT TO THE NAVY (BTN)
by department (DEPT)	μ = 5.51 σ = 1.65 median = 5.00	μ = 5.15 σ = 1.65 median = 6.00
by warfare area (WARF)	μ = 4.43 σ = 1.83 median = 6.00	μ = 4.64 σ = 1.89 median = 5.00
by separate engineering path (SEP)	μ = 3.82 σ = 2.28 median = 4.00	μ = 4.55 σ = 2.26 median = 5.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
DEPT	accept	0.54	.59	148	0.48	.63	148	BTN > CG	43.02	44
								CG > BTN	41.92	40
								ties	---	63
WARF	accept	1.63	.11	148	1.56	.12	147	BTN > CG	35.79	48
								CG > BTN	41.93	27
								ties	---	72
SEP	reject	5.60	***	148	5.31	***	147	BTN > CG	37.96	61
								CG > BTN	32.13	12
								ties	---	74

*** = observed significance level is less than .001.

separate engineering career path proposal would be significantly more beneficial to the Navy then it would be compatible with career aspirations. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Sixty-one respondents (mean rank = 37.96) indicated a stronger belief that the benefit to the Navy would be greater while 12 (mean rank = 32.13) believed the converse to be true.

2. Hypothesis 2

The objective of the test was to determine which specialization approach was perceived to be the most beneficial to the Navy. Table 6 summarizes the results.

The hypothesis was rejected for the comparison of the departmental approach with the warfare area approach. Respondents believe departmental specialization would be significantly more beneficial to the Navy than warfare area specialization. The probability of falsely rejecting the null hypothesis is .01 for the t-statistic and .02 for WMST Z-statistic. Sixty respondents (mean rank = 52.67) ranked departmental specialization higher than warfare area specialization while 39 respondents (mean rank = 45.90) believed the converse to be true.

The hypothesis was rejected for the comparison of departmental specialization with the separate engineering career path approach. Respondents believe departmental specialization would be significantly more beneficial to the

TABLE 6

HYPOTHESIS 2

Ho: Each specialization approach is equally beneficial to the Navy.

SPECIALIZATION APPROACH	μ	σ	MEDIAN
by department (DEPT)	5.15	1.72	6.00
by warfare area (WARF)	4.64	1.88	5.00
by separate engineering path (SEP)	4.55	2.26	5.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
DEPT vs WARF	reject	2.51	.01	148	2.39	.02	147	DEPT > WARF	52.67	60
								WARF > DEPT	45.90	39
								ties	---	48
DEPT vs SEP	reject	3.14	**	148	3.08	**	147	DEPT > SEP	53.31	63
								SEP > DEPT	44.21	36
								ties	---	48
WARF vs SEP	accept	0.74	.46	148	0.71	.48	147	WARF > SEP	55.89	61
								SEP > WARF	57.24	51
								ties	---	35

** = observed significance level is less than .01.

Navy than the separate engineering career path approach. The probability of falsely rejecting the null hypothesis for both test statistics is less than .01. Sixty-three respondents (mean rank = 53.31) ranked the department approach higher while 36 (mean rank = 44.21) ranked the separate engineering approach higher.

The hypothesis was accepted for the comparison of the warfare area approach and the separate engineering career path approach. Respondents believe warfare area specialization would be as beneficial to the Navy as the separate engineering career path approach. If the null hypothesis is true, there is a .46 probability for the t-statistic and a .48 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

The perceptualized benefit to the Navy was ranked highest for specialization by department followed by warfare area specialization and the separate engineering career path approach.

3. Hypothesis 3

The objective of the test was to determine which specialization approach was perceived to be most compatible with officer career aspirations. Table 7 summarizes the results.

The hypothesis was rejected for the comparison of departmental and warfare area approaches. Respondents

TABLE 7

HYPOTHESIS 3

Ho: Each specialization approach is equally compatible with career goals.

SPECIALIZATION APPROACH	μ	σ	MEDIAN
by department (DEPT)	5.06	1.65	5.00
by warfare area (WARF)	4.43	1.83	4.00
by separate engineering path (SEP)	3.82	2.81	4.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
DEPT vs WARF	reject	3.13	**	148	3.02	**	147	DEPT > WARF	53.48	66
								WARF > DEPT	47.86	36
								ties	---	45
DEPT vs SEP	reject	6.26	***	148	5.54	***	147	DEPT > SEP	63.07	87
								SEP > DEPT	47.18	30
								ties	---	30
WARF vs SEP	reject	3.13	**	148	3.23	**	147	WARF > SEP	64.36	72
								SEP > WARF	50.42	45
								ties	---	30

** = observed significance level is less than .01
*** = observed significance level is less than .001

believe departmental specialization would be significantly more compatible with career aspirations. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Sixty-six respondents (mean rank = 53.48) ranked departmental specialization higher while 36 respondents (mean rank = 47.86) ranked warfare area higher.

The hypothesis was rejected for the comparison of departmental specialization with the separate engineering career path approach. Respondents believe that departmental specialization would be significantly more compatible with career aspirations and they believe the separate engineering career path approach is incompatible with career aspirations (the sample mean was less than 4.00). The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Eighty-seven respondents (mean rank = 63.07) ranked departmental specialization higher while 30 (mean rank = 47.18) ranked the separate engineering career path higher.

The hypothesis was rejected for the comparison of warfare area specialization and the separate engineering career path approach. Respondents believe warfare area specialization would be more compatible with aspirations. The probability of falsely rejecting the null hypothesis for both test statistics is less than .01. Seventy-two respondents (mean rank = 64.36) ranked warfare area

specialization higher and 45 respondents (mean rank = 50.42) ranked the separarate engineering career path higher.

Respondents ranked departmental specialization highest in compatibility with career aspirations followed by warfare area specialization. The separate engineering career path proposal was perceived to be incompatible with career aspirations.

4. Hypothesis 4

The null hypothesis essentially states that, for the division officer and the department head, managerial and technical competencies are equally important attributes. Table 8 summarizes the results.

For the comparisons of criticality to job performance the hypothesis was rejected. Respondents believe managerial competency and technical competency are more critical to the job performance of the department head. The probability of falsely rejecting the null hypotheses for both test statistics is less than .001. Sixty-nine respondents (mean rank = 39.12) indicated managerial competency was more critical to the department head than to the division officer while nine respondents (mean rank = 42.44) indicated the converse perception. Seventy-three respondents (mean rank = 47.24) indicated technical competency was more critical to a department head's job performance than to a division officer's job performance

TABLE 8

HYPOTHESIS 4

Ho: Technical and managerial competencies are as important to the division officer as they are to the department head.

VARIABLE	DIVISION OFFICER (DO)	DEPARTMENT HEAD (DH)
criticality to job performance of technical competency (JTEC)	μ = 4.79 σ = 1.10 median = 5.00	μ = 5.38 σ = 1.23 median = 6.00
criticality to job performance of managerial competency (JMAN)	μ = 5.80 σ = 1.01 median = 6.00	μ = 6.35 σ = 0.82 median = 7.00
contribution to ship's readiness of technical competency (RTEC)	μ = 4.89 σ = 1.28 median = 5.00	μ = 5.44 σ = 1.32 median = 6.00
contribution to ship's readiness of managerial competency (RMAN)	μ = 5.45 σ = 1.35 median = 6.00	μ = 6.21 σ = 1.04 median = 6.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
JTEC	reject	5.75	***	148	5.10	***	153	DO > DH	43.66	19
								DH > DO	47.24	73
								ties	---	61
JMAN	reject	6.45	***	148	5.77	***	147	DO > DH	42.44	9
								DH > DO	39.12	69
								ties	---	69
RTEC	reject	5.84	***	148	5.09	***	147	DO > DH	35.32	17
								DH > DO	43.12	65
								ties	---	71
RMAN	reject	8.53	***	148	7.00	***	153	DO > DH	43.30	5
								DH > DO	42.45	79
								ties	---	69

*** = observed significance level is less than .001

while 19 (mean rank = 43.66) indicated the converse to be true.

For the comparisons of contribution to ship's readiness the hypothesis was rejected. Respondents believe department head managerial and technical competencies are more contributory to ship's readiness than are those of the division officer. The probability of falsely rejecting the null hypotheses for both test statistics is less than .001. Respondents indicated that department head technical competency contributed more to ship's readiness in 65 cases (mean rank = 43.12) while 17 respondents (mean rank = 35.32) indicated the division officer's contribution was greater. With regard to managerial competency, 79 respondents (mean rank = 42.45) indicated the department head's contribution to ship's readiness was greater than that of the division officer's while five respondents (mean rank = 43.30) indicated the converse to be true.

In addition to rating the above competencies, respondents were also asked to rate the importance of leadership skills and tactical/watchstanding skills. Respondents perceived each of these attributes to be significantly more important to the department head in both criticality to job performance and contribution to ship's readiness. The probability of falsely rejecting the null hypotheses for both test statistics is less than .001.

However, these results are not critical to the hypothesis test so are not included in Table 8.

5. Hypothesis 5

The objective of the test was to rank order the perceptions of the four professional attributes of the department head with regard to their contribution to ship's readiness. Table 9 summarizes the results.

The hypothesis was accepted for the comparison of leadership skills with managerial competency. Respondents believe leadership skills are as contributory to ship's readiness then is managerial competency. If the null hypothesis is true, there is a .11 probability for the t-statistic and a .23 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

The hypothesis was rejected for the comparison of leadership skills with technical competency. Respondents believe leadership skills are significantly more contributory to ship's readiness then is technical competency. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Eighty-seven respondents (mean rank = 52.30) indicated leadership skills contributed more than technical competency while 15 respondents (mean rank = 46.87) indicated the converse to be true.

TABLE 9

HYPOTHESIS 5

Ho: For a department head, the contributions to ships readiness of managerial and technical competencies are equal to those of other professional attributes.

VARIABLE	μ	σ	MEDIAN
leadership skills (LDR)	6.35	0.96	7.00
tactical/watchstanding skills (TAC)	6.38	0.97	7.00
technical competency (TEC)	5.44	1.32	6.00
managerial competency (MAN)	6.21	1.04	6.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
LDR vs TEC	reject	7.54	***	148	6.42	***	153	TEC > LDR	46.87	15
								LDR > TEC	52.30	87
								ties	---	51
LDR vs MAN	accept	1.36	.11	148	1.20	.23	153	MAN > LDR	35.54	25
								LDR > MAN	31.41	40
								ties	---	88
TAC vs TEC	reject	7.98	***	148	6.81	***	153	TEC > TAC	45.19	13
								TAC > TEC	52.41	89
								ties	---	51
TAC vs MAN	accept	1.61	.11	148	1.51	.13	153	MAN > TAC	39.40	25
								TAC > MAN	33.33	45
								ties	---	83
TEC vs MAN	reject	6.86	***	148	6.17	***	153	TEC > MAN	41.62	17
								MAN > TEC	51.74	82
								ties	---	54

*** = observed significance level is less than .001

The hypothesis was rejected for the comparison of tactical/watchstanding skills with technical competency. Respondents believe tactical/watchstanding skills are significantly more contributory to ship's readiness then is technical competency. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Eighty-nine respondents (mean rank = 52.41) indicated leadership skills contributed more to ship's readiness than did technical competency while 13 (mean rank = 45.19) indicated the converse to be true.

The hypothesis was rejected for the comparison of managerial competency with technical competency. Respondents believe managerial competency is significantly more contributory to ship's readiness then is technical competency. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Eighty-two respondents (mean rank = 51.74) indicated managerial competency contributed more to ship's readiness than did technical competency while 17 (mean rank = 41.62) indicated the converse to be true.

Finally, the hypothesis was accepted for the comparison of tactical/watchstanding skills with managerial competency. Respondents believe tactical/watchstanding skills are as contributory to ship's readiness as is managerial competency. If the null hypothesis is true, there is a .11 probability for the t-statistic and a .13

probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

For leadership skills, tactical/watchstanding skills and managerial competency, the perception that these attributes of the department head contribute equally to ship's readiness must be accepted while technical competency is perceived to be significantly less contributory to ship's readiness.

6. Hypothesis 6

The objective of the test was to determine if each of the department head professional attributes contribute as strongly to ship's readiness as they are critical to job performance. Table 10 summarizes the results.

For leadership skills the hypothesis was accepted. Respondents believe leadership skills are as contributory to ship's readiness as they are critical to job performance. If the null hypothesis is true, there is a .08 probability for the t-statistic and a .10 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

For tactical/watchstanding skills, the equality hypothesis was rejected. Respondents believe tactical/ watchstanding skills are significantly more contributory to ship's readiness then they are critical to job performance. The probability of falsely rejecting the null hypothesis for both test statistics is less than .01. Thirty-six

TABLE 10

HYPOTHESIS 6

Ho: Each of the department head's professional attributes contribute as strongly to ship's readiness as they are critical to job performance.

VARIABLE	CONTRIBUTION TO SHIP'S READINESS (RED)	CRITICALITY TO JOB PERFORMANCE (PERF)
leadership skills (LDR)	μ = 6.35 σ = 0.96 median = 7.00	μ = 6.46 σ = 0.80 median = 7.00
tactical/watchstanding skills (TAC)	μ = 6.38 σ = 0.97 median = 7.00	μ = 6.15 σ = 1.04 median = 6.00
technical competency (TEC)	μ = 5.44 σ = 1.32 median = 6.00	μ = 5.38 σ = 1.23 median = 6.00
managerial competency (MAN)	μ = 6.21 σ = 1.04 median = 6.00	μ = 6.35 σ = 0.82 median = 7.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
LDR	accept	1.78	.08	148	1.63	.10	153	RED > PERF	20.30	15
								PERF > RED	21.40	26
								ties	---	112
TAC	reject	3.23	**	148	3.13	**	153	RED > PERF	22.07	36
								PERF > RED	26.72	9
								ties	---	108
TEC	accept	0.86	.39	148	0.93	.35	153	RED > PERF	25.29	29
								PERF > RED	25.79	21
								ties	---	103
MAN	accept	1.68	.10	148	1.24	.20	153	RED > PERF	18.47	18
								PERF > RED	22.98	23
								ties	---	106

** = observed significance level is less than .01

respondents (mean rank = 22.07) indicated this attribute contributed more strongly to ship's readiness while nine respondents (mean rank = 26.72) believed the attribute was more critical to job performance.

For technical competency, the hypothesis was accepted. Respondents believe this attribute is as contributory to ship's readiness as it is critical to job performance. If the null hypothesis is true, there is a .39 probability for the t-statistic and a .35 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

For managerial competency, the hypothesis was accepted. Respondents believe managerial competency is as contributory to ship's readiness as it is critical to job performance. If the null hypothesis is true, there is a .10 probability for the t-statistic and a .20 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

Except for tactical/watchstanding skills, which were perceived to contribute more to ship's readiness than they were critical to job performance, the null hypothesis for each comparison was accepted. For a department head, respondents believe leadership skills, managerial conpetency and technical competency contribute as strongly to ship's readiness as they are critical to job performance.

7. Hypothesis 7

The null hypothesis states that, if implemented at the department head level, a specialization policy would equally benefit combat, material and fleet readiness. Table 11 summarizes the results.

The hypothesis was rejected for the comparison of fleet readiness with material readiness. Respondents believe the policy would benefit material readiness more then it would benefit fleet readiness. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Fifty-one respondents (mean rank = 32.91) expressed a stronger belief that material readiness would be improved relative to that of fleet readiness while 14 respondents (mean rank = 33.32) believed the converse to be true.

The hypothesis was rejected for the comparison of fleet readiness with combat readiness. Respondents believe specialization policy would benefit combat readiness more then it would benefit fleet readiness. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Fifty respondents (mean rank = 31.73) ranked higher the perception that combat readiness would be improved while 13 respondents (mean rank = 33.04) ranked higher the perception that fleet readiness would be improved.

TABLE 11

HYPOTHESIS 7

Ho: Specialization implemented at the department head level would benefit fleet, material, and combat readinesses equally.

VARIABLE	μ	σ	MEDIAN
specialization would significantly improve fleet readiness (FLT)	4.88	1.36	5.00
specialization would significantly improve material readiness (MAT)	5.26	1.32	5.00
specialization would significantly improve combat readiness (COM)	5.30	1.35	5.00

	T-TEST				WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
FLT vs MAT	reject	4.56	***	148	3.96	***	147	FLT > MAT	33.32	14
								MAT > FLT	32.91	51
								ties	---	82
FLT vs COM	reject	4.39	***	148	3.96	***	147	FLT > COM	33.04	13
								COM > FLT	31.73	50
								ties	---	84
MAT vs COM	accept	0.16	.87	148	0.35	.73	147	MAT > COM	26.38	21
								COM > MAT	23.04	27
								ties	---	99

*** = observed significance level is less than .001

The hypothesis was accepted for the comparison of combat readiness with material readiness. Respondents believe the policy would equally benefit combat and material readinesses. If the null hypothesis is true, there is a .87 probability for the t-statistic and a .73 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

Respondents perceived that implementation of a department head specialization policy would result in significantly higher levels of combat and material readinesses. With regard to fleet readiness, respondents perceived either the impact of specialization would be less significant or they were unsure of any impact.

8. Hypothesis 8

The hypothesis tests the perception of the impact on readiness of a single 30 month department head tour compared to split 18 month tours. Table 12 summarizes the results.

The hypothesis was accepted for the comparison of material readiness with combat readiness. Respondents believe the single tour would promote higher and equally significant levels of material and combat readinesses. If the null hypothesis is true, there is a .29 probability for the t-statistic and a .38 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

TABLE 12

HYPOTHESIS 8

Ho: Relative to split touring, a single 30 month tour would not promote significantly higher levels of fleet, material, or combat readiness.

VARIABLE	μ	σ	MEDIAN
single tour would promote significantly higher levels of fleet readiness (FLT)	4.65	1.52	5.00
single tour would promote significantly higher levels of material readiness (MAT)	4.90	1.56	5.00
single tour would promote significantly higher levels of combat readiness (COM)	5.00	1.44	5.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
FLT vs MAT	reject	2.71	.01	148	2.57	.01	147	FLT > MAT	39.53	46
								MAT > FLT	32.69	27
								ties	---	74
FLT vs COM	reject	4.90	***	148	4.52	***	147	FLT > COM	15.00	6
								COM > FLT	22.58	36
								ties	---	105
MAT vs COM	accept	1.07	.29	148	0.88	.38	147	MAT > COM	27.52	33
								COM > MAT	37.81	31
								ties	---	83

*** = observed significance level is less than .001

The hypothesis was rejected for the comparison of combat readiness with fleet readiness. Respondents believe the benefits to combat readiness would be significantly greater. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Thirty-six respondents (mean rank = 22.58) expressed a stronger belief that combat readiness would be significantly benefitted relative to that of fleet readiness while 6 respondents (mean rank = 15.00) indicated the converse was true.

The hypothesis was rejected for the comparison of material readiness with fleet readiness. Respondents believe the benefits to material readiness would be significantly greater than those to fleet readiness. The probability of falsely rejecting the null hypothesis for both test statistics is .01. Forty-six respondents (mean rank = 39.53) expressed a stronger belief that material readiness would be significantly benefitted while 27 respondents (mean rank = 32.69) indicated a stronger belief that fleet readiness would be significantly benefitted.

Respondents perceived that the longer single tour would tend to promote significantly higher levels of the three readinesses, the median strength of perception for each readiness was 5.00. For combat and material readinesses, the differences in strength of the perceptions were not statistically significant. They believe that the

benefits to each would be equal. The strength of the perception was significantly less for fleet readiness. Respondents were either unsure of the benefits to fleet readiness or they believed the perceived benefits would be less than the anticipated benefits to combat and material readinesses.

9. Hypothesis 9

The objective of the test was to determine if the respondents believe implementation of the proposed department head rotation system would significantly benefit ship's deployed combat readiness (DCR). Table 13 summarizes the results.

The statement that implementation of the rotation policy would significantly benefit DCR and the statement that the policy would have little effect because ship's now deploy as combat ready as is humanly possible were compared. The hypothesis was rejected for the comparison. Respondents believe that implementation would significantly increase DCR. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. One hundred ten respondents (mean rank = 71.46) indicated a stronger belief that implementation would benefit DCR while 20 respondents (mean rank = 31.75) indicated a stronger belief that ship's now deploy as combat ready as is humanly possible. The median values of the variables were 6.00 and 3.00, respectively. Not only did respondents believe

TABLE 13

HYPOTHESIS 9

Ho: The proposed rotation system would have little impact on ship's deployed combat readiness.

VARIABLE	μ	σ	MEDIAN
proposal would significantly increase ship's deployed combat readiness (ROT1)	5.50	1.32	6.00
proposal would have liitle effect because deployed combat readiness is most heavily dependent on other factors (ROT2)	3.26	1.56	3.00
proposal would have little effect because ships now deploy as combat ready as is humanly possible (ROT3)	2.99	1.72	3.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
									mean	
COMPARISON	Ho	ts	p	df	Z	p	N		rank	cases
ROT1 vs ROT2	reject	10.76	***	148	7.81	***	147	ROT1 > ROT2	71.47	111
								ROT2 > ROT1	44.45	22
								ties	---	14
ROT1 vs ROT3	reject	12.06	***	148	8.42	***	147	ROT1 > ROT3	71.46	110
								ROT3 > ROT1	31.75	20
								ties	---	17

*** = observed significance level is less than .001

implementation would significantly benefit DCR but also that ship's do not now deploy as combat ready as is humanly possible.

The statement that implementation would significantly benefit DCR and the statement that implementation would have little effect because DCR is not department head dependent were compared. The hypothesis was rejected for the comparison. Respondents believe that implementation of the rotation policy would result in significant gains to DCR. The probability of falsely rejecting the null hypothesis for both statistics is less than .001. One hundred eleven respondents (mean rank = 71.47) indicated a stronger belief that implementation would benefit DCR while 22 (mean rank = 44.45) indicated a stronger belief that implementation would have no significant effect. The median values of the variables were 6.00 and 3.00, respectively. Not only did the respondents believe implementation would significantly benefit DCR but also that DCR is to a measurable extent department head dependent.

Respondents believed that deployed combat readiness is, at least partially, department head dependent and they overwhelmingly believed implementation of a detailing policy to provide department head continuity through the work-up cycle and deployment would significantly increase deployed combat readiness.

10. Hypothesis 10

The objective of the test was to determine if respondents believe the rotation proposal would have to be expanded beyond the department head level to significantly benefit deployed combat readiness (DCR). Table 14 summarizes the results.

The hypothesis was rejected for the comparison that the proposal would have to be expanded beyond the department level to significantly impact DCR against the proposal would significantly increase DCR. Respondents believe the rotation proposal would not have to be expanded to realize significant DCR gains. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Sixty-six respondents (mean rank = 56.25) indicated a stronger belief that the proposal would significantly increase DCR while 36 respondents (mean rank = 42.79) indicated a stronger belief that the proposal would have to be expanded beyond the department head level to impact DCR.

11. Hypothesis 11

The null hypothesis states that SWO PQS serves equally as: a tool the prospective SWO uses to gain background warfare experience, a sufficient fleetwide standard for the minimum level of warfare qualification required of a SWO, a flexible tool individual commands adapt to suit their qualification requirements, a tool with which

TABLE 14

HYPOTHESIS 10

Ho: The proposed rotation system would need to be expanded beyond the department head level to significantly impact deployed combat readiness.

VARIABLE	μ	σ	MEDIAN
proposal would significantly increase ship's deployed combat readiness (ROT1)	5.50	1.32	6.00
proposed system would need to be expanded beyond the department head level to significantly impact ship's deployed combat readiness (ROT4)	4.84	1.66	6.00

	T-TEST				WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
ROT1 vs ROT4	reject	4.22	***	148	3.63	***	147	ROT1 > ROT4	56.25	66
								ROT4 > ROT1	42.79	36
								ties	---	45

*** = observed significance level is less than .001

to document qualification progress. Table 15 summarizes the results.

The hypothesis was rejected for the comparisons of the statement that SWO PQS is primarily a learning tool to gain warfare background experience against the statements that it is a sufficient standard for warfare qualification, it is a flexible tool which commands adapt to suit their SWO qualification requirements, and it primarily serves as a tool to document SWO qualification progress. For each comparison, significantly more respondents indicated a stronger belief that PQS was primarily a learning tool to gain background warfare experience. The probability of rejecting the null hypotheses for both test statistics is less than .001.

The hypothesis was accepted for the comparison of SWO PQS as a sufficient qualification standard against SWO PQS as primarily a flexible tool which commands adapt to suit their qualification requirements. Respondents believe PQS serves both purposes equally. If the null hypothesis is true, there is a .14 probability for the t-statistic and a .13 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

The hypothesis was accepted for the comparison of SWO PQS as a sufficient qualification standard against SWO PQS as primarily providing documentation to chart qualification progress. Respondents believe PQS serves both

TABLE 15

HYPOTHESIS 11

Ho: SWO PQS serves equally as: a tool the prospective SWO uses to gain background warfare experience (EXP), a sufficient fleetwide standard for the minimum level of warfare qualification required of a SWO (STD), a flexible tool individual commands adapt to suit their qualification requirements (FLX), a tool with which to document qualification progress (DOC).

VARIABLE	μ	σ	MEDIAN
EXP	5.55	1.09	6.00
STD	4.64	1.63	5.00
FLX	4.89	1.45	5.00
DOC	4.32	1.58	5.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
EXP vs STD	reject	7.01	***	148	6.18	***	149	EXP > STD	46.57	71
								STD > EXP	28.97	15
								ties	---	63
EXP vs FLX	reject	4.71	***	148	4.37	***	149	EXP > FLX	59.48	71
								FLX > EXP	41.37	35
								ties	---	43
EXP vs DOC	reject	7.80	***	148	6.56	***	149	EXP > DOC	59.25	93
								DOC > EXP	46.52	20
								ties	---	36
STD vs FLX	accept	1.47	.14	148	1.53	.13	149	STD > FLX	55.56	44
								FLX > STD	53.77	64
								ties	---	41
STD VS DOC	accept	1.78	.08	148	1.67	.09	149	STD > DOC	55.18	61
								DOC > STD	51.22	45
								ties	---	43
FLX vs DOC	reject	3.42	***	148	3.47	***	149	FLX > DOC	56.08	69
								DOC > FLX	47.10	36
								ties	---	44

*** = observed significance level is less than .001

purposes equally. If the null hypothesis is true, there is a .08 probability for the t-statistic and a .09 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

The hypothesis was rejected for the comparison of SWO PQS as primarily a command's flexible tool against SWO PQS as primarily providing qualification documentation. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Significantly more respondents indicated stronger agreement with the flexible tool statement than with the qualification documentation statement.

Of the four comparisons, respondents overwhelmingly perceived SWO PQS to be, primarily, a learning tool used to gain warfare background experience. It cannot be inferred that SWO PQS does not serve the other purposes examined, just that they are not the system's primary value.

12. Hypothesis 12

The objective of the test was to compare the perceived adequacy of the SWO qualification system in meeting the minimum criteria the fleet requires with the adequacy of the qualification system in setting satisfactory standards of performance and expertise required to obtain SWO qualification. Table 16 summarizes the results.

The hypothesis test was not completed for the comparison of the minimum fleet criteria variable with the

TABLE 16

HYPOTHESIS 12

Ho: The present SWO qualification system meets the minimum qualification criteria the fleet requires and equally sets sufficient SWO performance and expertise qualification standards.

VARIABLE	μ	σ	MEDIAN
the present system adequately meets the minimum qualification criteria the fleet requires (FLT)	4.27	1.85	4.50
the present system sets sufficient SWO performance and expertise standards for qualification (SWO)	3.53	1.79	3.00
fleetwide standardization of requirements for SWO qualification is a relevant issue (STD)	5.13	1.67	5.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
FLT vs STD	reject	4.00	***	151	3.96	***	152	FLT > STD	45.75	50
								STD > FLT	73.82	74
								ties	---	28
SWO vs STD	reject	3.76	***	151	3.75	***	152	SWO > STD	50.95	33
								STD > SWO	55.36	74
								ties	---	45

*** = observed significance level is less thsn .001.

satisfactory performance and expertise standards variable. The distribution of paired response data was strongly bimodal. Responses were highly correlated (r = .634) and polarized indicating respondents tended to either strongly agree with both statements or strongly disagree with both. In this instance, hypothesis testing the equality of the differences of means is meaningless.

The hypothesis was rejected for the comparisons that fleetwide standardization of requirements for SWO qualification is a relevant issue with the minimum qualification criteria the fleet requires variable and the sufficient performance and expertise standards variable. Respondents believe more strongly in the relevancy of the issue than they believe the system meets minimum fleet criteria and sets sufficient performance and expertise standards. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001.

13. Hypothesis 13

The objective of the test was to determine the perception of which organizational levels were most responsible for SWO warfare training. Table 17 summarizes the results.

The hypothesis was rejected for the comparison of the CO's responsibility with the Navy's responsibility for warfare training. Respondents indicated significantly stronger agreement that the Navy should be as dedicated to

TABLE 17

HYPOTHESIS 13

Ho: The individual SWO, ship's commanding officer, and the Navy are equally responsible for training SWO's to be warriors.

VARIABLE	μ	σ	MEDIAN
individual SWO's responsibility (SWO)	5.22	1.63	6.00
ship's commanding officer's responsibility (CO)	5.53	1.48	6.00
Navy's responsibility (NAV)	6.22	1.16	7.00
qualification ia a personal goal to be attained by every SWO according to his own faculties (PER)	3.77	1.85	3.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
CO vs NAV	reject	6.29	***	148	5.49	***	149	CO > NAV	38.04	12
								NAV > CO	40.35	67
								TIES	---	70
CO vs SWO	accept	0.03	.97	148	0.38	.70	149	CO > SWO	61.26	46
								SWO > CO	49.28	62
								ties	---	41
NAV vs SWO	reject	4.10	***	148	3.85	***	149	NAV > SWO	50.25	61
								SWO > NAV	37.37	30
								ties	---	58
NAV vs PER	reject	13.42	***	148	8.94	***	149	NAV > PER	68.22	114
								PER > NAV	26.96	13
								ties	---	22
SWO vs PER	reject	10.00	***	148	7.61	***	149	SWO > PER	63.14	102
								PER > SWO	41.15	17
								ties	---	30

*** = observed significance level is less than .001.

SWO warfare training as it is to other high-priority training programs. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Sixty-seven respondents (mean rank = 40.35) indicated stronger agreement with the Navy responsibility statement while 12 (mean rank = 38.04) indicated stronger agreement with the CO's responsibility statement.

The hypothesis was accepted for the comparison of the CO's responsibility for warfare training and the individual's responsibility for preparing himself to be a warrior. Respondents believe the CO's responsibility for training SWO's to be warriors relative to other officer training priorities is equal to that of the individual's responsibilty to not only do his job but also prepare himself to be a warrior. If the null hypothesis is true, there is a .97 probability for the t-statistic and a .70 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

The hypothesis was rejected for the comparison of the Navy's responsibility for warfare training and the individual's responsibility for preparing himself to be a warrior. Respondents indicated significantly stronger agreement that the Navy should be as dedicated to SWO warfare training as it is to other high priority-training programs. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001.

Sixty-one respondents (mean rank = 50.25) indicated stronger agreement with the Navy responsibility statement while 30 respondents (mean rank = 37.37) indicated stronger agreement with the individual's responsibility statement.

The most organizationally polarized perception of responsibility was tested. The hypothesis was rejected for the comparison that the Navy should be as dedicated to SWO warfare training as it is to other high-priority training programs with SWO qualification as a personal goal to be attained by the individual according to his own faculties and not in a programmed locked-step mode. Respondents indicated significantly stronger agreement that the Navy should be as dedicated to SWO warfare training as it is to other high-priority training programs. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. One hundred fourteen respondents (mean rank = 68.22) indicated stronger agreement with the Navy responsibility statement while 13 respondents (mean rank = 26.96) indicated stronger agreement with the personal goal statement.

Finally, the hypothesis was rejected for the comparison of individual's responsibility for preparing himself to be a warrior with SWO qualification as a personal goal to be attained by the individual according to his own faculties and not in a programmed locked-step mode. Respondents indicated significantly stronger agreement that

it is primarily the individual's responsibility to not only do his job but also prepare himself to be a warrior. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. One hundred two respondents (mean rank = 63.14) indicated stronger agreement with the individual's responsibility statement while 17 (mean rank = 41.15) indicated stronger agreement with the personal goal statement. Respondents believe the individual must be self-motivated, beyond the scope of his day to day duties, to prepare himself to be a warrior and that the path to qualification requires an organized formal structure.

The strongest perception of responsibility for warfare training was that the Navy should be as dedicated to warfare training as it is to other high-priority programs.

14. Hypothesis 14

The objective of the test was to determine if respondents believe a SWO exam would set a minimum standard for warfare qualification regardless of whether or not they believe an adequate standard now exists. Table 18 summarizes the results.

The hypothesis was rejected for the comparison of the present system meeting the minimum qualification criteria the fleet requires against the proposed exam setting a minimum standard for SWO qualification. Respondents believe more strongly that an exam would better

TABLE 18

HYPOTHESIS 14

Ho: A fleetwide SWO qualification exam would serve to set a minimum standard of warfare qualification regardless of whether or not an adequate standard now exists.

VARIABLE	μ	σ	MEDIAN
the present qualification system sets adequate minimum fleet fleet criteria (CRIT)	4.27	1.85	4.50
a fleetwide exam would serve to set an adequate minimum qualification standard (EXAM)	4.87	1.69	5.00
the present qualification system sets adequate expertise and performance qualification standards (STD)	3.52	1.79	3.00
SWO PQS sufficiently standardizes the minimum level of warfare qualification (PQS)	4.63	1.64	5.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
CRIT vs EXAM	reject	2.53	.01	148	2.54	.01	149	CRIT > EXAM	54.43	48
								EXAM > CRIT	63.77	71
								ties	---	30
STD vs EXAM	reject	5.78	***	148	5.38	***	149	STD > EXAM	57.26	35
								EXAM > STD	70.61	96
								ties	---	18
PQS vs EXAM	accept	1.09	.28	148	1.19	.23	149	PQS > EXAM	58.03	51
								EXAM > PQS	58.87	65
								ties	---	33

*** = observed significance level is less than .001.

set a minimum standard for warfare qualification. The probability of falsely rejecting the null hypothesis for both test statistics is .01. Seventy-one respondents (mean rank = 63.77) indicated a stronger belief that an exam would set a minimum standard. Forty-eight respondents (mean rank = 54.43) indicated a stronger belief that the present system meets the minimum fleet criteria required.

The hypothesis was rejected for the comparison of the present qualification system setting sufficient performance and expertise standards for qualification against the proposed exam setting a minimum standard for SWO qualification. Respondents believe more strongly that an exam would better set a minimum standard for SWO qualification. The probability of falsely rejecting the null hypothesis for both test statistics is less than .001. Ninety-six respondents (mean rank = 70.61) indicated a stronger belief that an exam would set a minimum standard while 35 (mean rank = 57.26) indicated a stronger belief that the present system sets sufficient performance and expertise standards for qualification.

The hypothesis was accepted for the comparison of PQS as a sufficient minimum standard with an exam setting a minimum standard. Respondents did not believe that an exam would better set a minimum standard for SWO qualification. If the null hypothesis is true, there is a .28 probability for the t-statistic and a .23 probability for the WMST Z-

statistic of obtaining test statistic values at least as extreme as those observed.

Respondents perceive that an exam, administered as a requirement for warfare qualification, would set a minimum qualification standard regardless of whether or not they believe the present qualification system sets adequate minimum standards. In the last comparison, a statistically significant difference in the strength of perception was not present. Respondents believe as strongly that the exam would set a minimum standard as they believe the PQS system sufficiently standardizes the minimum SWO qualification level.

15. Hypothesis 15

The objective of the hypothesis test was to determine if respondents believe an exam would set a minimum qualification standard or if they believe an exam would be impractical. Respondents believe an exam is practical and it could set a minimum qualification standard. Table 19 summarizes the results.

The hypothesis was rejected for the comparison. The probability of falsely rejecting th null hypothesis for both test statistics is .01. Seventy-seven respondents (mean rank = 74.66) believe more strongly that an exam would set a minimum qualification standard. Fifty-seven respondents (mean rank = 57.82) believe more strongly that an exam would be impractical.

TABLE 19

HYPOTHESIS 15

Ho: A fleetwide SWO qualification exam could not be successfully implemented due to the diversity in the subject area.

VARIABLE	$\bar{x}$	σ	MEDIAN
a fleetwide exam would serve to set an adequate minimum standard for SWO qualification (EXAM)	4.87	1.69	5.00
a fleetwide SWO qualification exam could not be successfully implemented because of the diversity in the subject area (DIV)	4 13	1.98	4.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
EXAM vs DIV	reject	2.67	.01	148	2.72	.01	149	EXAM > DIV	74.66	77
								DIV > EXAM	57.82	57
								ties	---	15

16. Hypothesis 16

The objective of the hypothesis test was to determine if respondents expressed a preference for an exam structured in multiple versions or a single exam covering a narrowed topic area. Table 20 summarizes the results.

The hypothesis was accepted for the comparison of the two proposed exam structures. Respondents did not express a significant preference for either exam structure. If the null hypothesis is true, there is a .50 probability for the t-statistic and a .56 probability for the WMST Z-statistic of obtaining test statistic values at least as extreme as those observed.

TABLE 20

HYPOTHESIS 16

Ho: A multiple versioned exam which accounted for the variety of platforms and mission areas would not be preferable to a single generalized exam focused on a narrowed field of topics.

VARIABLE	μ	σ	MEDIAN
prefernce for a multiple versioned exam (MULT)	4.32	1.79	5.00
preference for a narrowed single exam (SIN)	4.19	1.85	4.00

		T-TEST			WILCOXON MATCHED-PAIRS SIGNED-RANKS TEST					
COMPARISON	Ho	ts	p	df	Z	p	N		mean rank	cases
MULT vs SIN	accept	0.68	.50	148	0.58	.56	149	MULT > SIN	52.91	55
								SIN > MULT	52.04	49
								ties	---	45

V. DISCUSSION

The traditional view that a surface warfare officer must be expert in all areas of surface warfare appears to be yielding to the complexity and technology of modern naval warfare [Ref. 1:p. 1]. The rationale that increasing technology mandates implementation of career path specialization is widely supported both officially and in professional literature [Refs. 1,3,6]. It is believed that greater officer technical expertise derived through specialization is necessary if the surface warfare community is to be adequately prepared to meet the threat now and in the future.

Survey analysis suggests respondents are very aware of the increased emphasis given to technical expertise and specialization. The majority of respondents believe development of technical expertise in a specific warfare area is a prerequisite for a successful career in today's Navy (Item 8). Analysis of demographic data indicates respondents are heavily specialized by both warfare area and department. However, they also strongly believe the best CO's and XO's are generalists rather than specialists (Item 7). These apparently contradictory observations are a result of the paradoxical nature of the SWO career path. Respondents perceive that a specialist's skills and

experience better serve a department head while a generalist's skills and experience better serve an XO or CO. Unless an effective transition is made from specialist to generalist, today's technically expert and specialized junior officers may not, in the future, find themselves to be inadequately prepared to successfully function in positions requiring a generalist's background.

The success of any specialization policy implementation would depend heavily upon SWO policy acceptance. Of the three frameworks for specialization, respondents perceived departmental specialization to be significantly more compatible with personal career aspirations and significantly more beneficial to the Navy. The fact that departmental specialization was the clearly preferred alternative could be due to several factors. Tracking officers by department may be perceived to be the most effective functional division. A significant number of respondents are now specialized by department as a result of previous policy implementation so they may prefer to remain with this alternative. Respondents may perceive that, if they desire to also specialize by warfare area, it would be less difficult to do so in a framework of departmental specialization than specialize by department in a framework of warfare area specialization. Finally, respondents may believe the specialized skills and experience inherent to each department can be more readily transferred across

warfare areas than warfare area skills and experience can be transferred across departments.

Before conclusions can be made concerning officer perceptions of department head specialization, the issue of technical competency must be placed into proper perspective. Respondents rated technical competency to be significantly more important to the department head than to the division officer with regard to both its contribution to ship's readiness and its criticality to job performance. Thus the emphasis to specialize at the department head level appears, as perceived by respondents, to be justified. However, they also believe leadership skills, tactical/watchstanding skills and managerial competency are more important to the department head. Therefore, respondents do not believe officer technical competency justifies specialization due to a perception that readiness has become more dependent on technical expertise than other department head professional attributes.

If the primary goal of mid-grade surface warfare officer development is assumed to be increased ship's readiness then career path policies should emphasize the development of officer attributes which contribute most to ship's readiness. While respondents indicated leadership skills, managerial competency and technical competency are each as critical to job performance as they are contributory to ship's readiness, they believed tactical/watchstanding

skills to be significantly more contributory to ship's readiness than critical to job performance. Increased emphasis on tactical and watchstanding skills in the evaluation of officer performance may yield greater readiness returns than specialization policy stressing technical competence. This is assuming perceptions of attribute criticality to job performance can be influenced through performance evaluation.

Department head specialization policy designed to increase readiness through increased officer technical competency is widely endorsed both officially and in professional journals. The surveyed officers endorse specialization as evidenced by their sea assignment choices and their perceptions of the degree to which they feel they are specialized. However, respondents do not believe technical competency issues mandate specialization.

The motivation to specialize is most likely not due to any officer altruistic perceptions of professional attributes. The observed degree to which respondents are specialized by department and warfare area is more likely due to preferences for experience continuity. Simply stated, this is the result of decisions to seek assignments in ship types and/or departments in which the officer has significant prior experience and in which he believes he may make the greatest contributions. This is not to say the needs of the Navy have not at times required some SWO's with

specific skills to serve in billets for which they have significant prior experience.

Building officer support for specialization because increased technical competency will lead to higher readiness is an interesting professional debate but hardly a necessary one. As long as career path policy is compatible with officer preferences for continuity of experience, acceptance of the policy can be expected. However, should assignment policy be implemented, for example, which requires officers to be assigned across warfare areas, community managers should expect resistance from the community's officers because this would be contrary to the officer assignment preferences observed in the demographic anlysis.

Regardless of their motivations to specialize, respondents believe readiness would, indeed, significantly benefit from a policy of specialization implemented at the first tour department head level. Specifically, benefits to combat readiness and material readiness were most strongly perceived while the expectation of improved fleetwide readiness was positive but not as strong. Sampled officers were unsure if specialization would tend to produce less effective CO's and XO's (Item 26) even though they believed the best CO's and XO's were generalists rather than specialists.

Analysis of the perceived impact on readiness of the single long tour assignment versus split 18 month tours

yielded similar results. Respondents believe the longer single tour assignment would promote significantly higher levels of combat readiness and material readiness while the perceived impact on fleetwide readiness was positive but not as strong. Respondents were undecided if the single long tour would subject the officer to greater career risks (Item 27). The belief that an officer assigned to a single long tour assignment would be able to more fully develop warfighting skills (Item 27) was not supported by survey statistics. Arguments for expansion of the longer single tour assignment policy are supported by SWO's for readiness considerations while the perceived uncertainty of other possible benefits and risks indicates only a qualified endorsement.

Expansion of the single long tour assignment policy may significantly improve ship's readiness and would be readily accepted by SWO's. A time continuity preference parallel to the experience continuity effect may be present. Given no incentive to do otherwise, SWO's may prefer a longer single department head tour to split touring. Additionally, a stronger preference for the single tour would probably occur if SWO's believed split touring was likely to result in an assignment across warfare areas. As with specialization, tour length policy changes would be more readily accepted and meet with greater success if officer preferences are identified and effectively addressed.

The current policy of rotating department heads in fixed time intervals may be the most practical way to detail officers from both the perspectives of SWOs and community managers. However, this policy may not be adequately supporting ship's deployed combat readiness. The proposal to detail ships according to their schedules instead of detailing department heads according to an arbitrary time interval was strongly supported. Respondents believed that implementation of the proposed rotation system would not only tend to significantly increase ship's deployed combat readiness but they also believed deployed combat readiness is, to a significant extent, department head dependent. Respondents did not believe the proposal would need to be expanded beyond the department head level to realize significant deployed combat readiness benefits. With regard to officer retention, respondents were unsure of the proposal's impact (Item 29).

The surface warfare community is often criticized because many feel its qualification system does not consistently produce officers who meet minimum personal qualification standards and fleet requirements. While the majority of respondents believed standardization of qualification requirements is a relevant issue (Item 31), they were strongly divided in their perceptions of the qualification system's adequacy. They tended to believe the system supports minimum fleet criteria and sufficient

personal qualification standards or they believed the system supports neither. The strongly bimodal clustering of paired response data for hypothesis 12 did not yield meaningful hypothesis test statistics. Qualification criteria required by the fleet and personal qualification standards do not adequately explain the strong perception of issue relevancy for the majority of respondents. There may exist other reasons why respondents believe the issue is relevant other than those examined.

Because standardization of SWO qualification is a relevant issue, the system component intended to provide a fleetwide framework for qualification, the PQS system, must be evaluated. The aggregate success or failure of the PQS component is dependent upon its perceived purposes and its implementation aboard ships. The strongest and most significant perception of the value of SWO PQS is that it provides the prospective SWO with a learning tool with which to gain basic warfare background and experience. This format is most widely accepted because as a learning tool it is less sensitive to the effects of the system's dependency on its implementation.

The perception that PQS is a sufficient fleetwide qualification standard was not significantly different than the perception that it is a flexible tool to be adapted to the individual command's qualification requirements. These perceptions represent the extremes in the level of PQS

implementation variability. PQS implementation is too inconsistent for it to be strongly perceived as a sufficient qualification standard while its implementation is not sufficiently flexible to be strongly perceived as effectively supporting the individual command's specific qualification requirements. The perceived multi-purposed nature and implementation of SWO PQS most likely serves neither purpose effectively.

Fleetwide examination of prospective SWO's as an additional component of the qualification system was supported in principle but not in method of implementation. The majority of respondents believe an exam would set a fleetwide minimum standard for SWO qualification. They also believe the diversity of missions, platforms and subject areas do not necessarily make a standardized exam infeasible. These perceptions are shared regardless of whether or not they believe minimum fleet criteria and sufficient performance and expertise standards now exist. However, when compared to the perceived sufficiency of PQS in standardizing a fleetwide minimum qualification level, the perception that an exam would serve to set such a standard was not significantly different.

Exam implementation is a critical factor because SWO's must believe the exam design and content adequately support its intended purposes. Of the two alternative methods for implementing the exam, respondents did not express a

statistically significant preference for either a multi-versioned exam or one limited in scope to warfare skills tactics, systems and capabilities. Respondents believed that focusing an exam on a limited number of specific topics to the exclusion of other fundamental aspects of surface warfare was as disadvantageous as a multiple versioned exam tailored to specific platforms and mission areas.

Respondents do not necessarily believe the present framework of the qualification system is inadequate. Prior to analysis it was anticipated that if PQS was believed to be an insufficient qualification standard than respondents would strongly support an exam as a standard for qualification. Respondents did not necessarily believe that PQS was an insufficient standard anymore than they believed an exam would be a sufficient standard (Table 18). Hypothesis testing revealed an exam was feasible (Table 19) but that implementation was a critical concern (Table 20). Therefore it may be concluded that, like an exam, PQS implementation as a qualification standard is the crucial issue and not its framework.

The relative responsibility for SWO warfare training of the three organizational levels generally believed to have the greatest impact upon the quality of junior surface warfare officers was evaluated. The purpose of this analysis is not to determine perceived organizational accountability for training SWO's to be warriors but to

determine perceptions of which levels should be allocating a greater share of limited resources from competing priorities to officer warfare training.

The strongest perception of responsibility for warfare training with regard to competing priorities was that the Navy should be more responsible. Respondents indicated the Navy should place greater emphasis on officer warrior training relative to other high-priority training programs. While respondents strongly believe commanding officers and the individual SWO must share a great measure of the responsibility, they also believe the allocation of resources to warfare training are more in line with competing priorities. Respondents appear to believe CO's have additional priorities related to other aspects of a CO's responsibilities which place equally significant demands on officer training. They also believe the individual SWO's competing responsibilities to his ship and its chain of command place great demands on the limited time and effort resources he may allocate. Analysis of survey results appear to indicate that the Navy may be the organizational level most able to bear the opportunity cost of greater resource allocation to officer warrior training.

VI. SUMMARY AND CONCLUSIONS

The objective of this thesis is to provide an analysis of Surface warfare officers' perceptions concerning officer career path, assignment rotation, qualification, and related readiness issues. To accomplish this, a survey of Naval Postgraduate School SWO's was conducted. Although the population sampled does not closely approximate the distribution of SWOs in the community, it does represent the cross section of the community most directly effected by the issues which are the subject of the research. Survey findings show:

- Respondents are heavily specialized and they strongly believe department head specialization enhances readiness.
- Respondents believe technical expertise is a prerequisite for a successful career but do not believe it mandates specialization.
- Respondents believe the best COs and XOs are generalists and not specialists.
- Leadership skills, tactical/watchstanding skills, and managerial skills are perceived to contribute more to readiness than does technical competency.
- Respondents believe longer single tours and rotation policy designed to ensure department head continuity throughout the work-up cycle and deployment would enhance readiness.
- SWO PQS is most strongly perceived to be a learning tool followed by the perception that it serves equally as a standard for SWO qualification and as a flexible tool commands adapt to suit their qualification requirements.

- Respondents believe the Navy is the organizational level most able to bear the opportunity cost of increased SWO warfare training.

- Respondents believe a qualification exam could better set an adequate standard for qualification than does the current qualification system but do not believe it could better set a standard for qualification than could SWO PQS.

- Respondents did not express a preference for either a multiple-versioned exam or a single generalized exam.

Analysis and interpretation of survey results yielded the following conclusions. Officer preferences for experience and time continuity appear to be the basis of support for the specialization policy because survey results indicate:

- Strong preferences for specialization can be inferred from demographic data analysis of respondent assignment histories.

- Specialization is strongly supported but not because technical competency mandates it.

- Specialization is strongly compatible with career aspirations.

Respondents indicated the best CO's and XO's are generalists and that specific warfare area technical expertise is critical to career success. Therefore, junior officers may find themselves to be inadequately prepared for future assignments unless the effective transition from specialist to generalist can be accomplished.

Survey results indicate that tactical and watchstanding skills are believed to be significantly more contributory to readiness than they are critical to job performance.

Therefore, increased emphasis on these skills in the evaluation of department performance may yield corresponding increases in readiness.

Data analysis revealed that the adequacy of the qualification system as a standard for qualification does not explain why respondents believe qualification requirements are a relevant issue. There may exist other reasons that can better explain the perception of issue relevancy.

SWO PQS, as a personal learning tool, was perceived to be its primary value. As a personal learning tool, its value is only relevant to how the individual uses it and not how it is implemented fleetwide. The fleetwide variability in PQS implementation and not its content can explain why survey results indicate that it is not strongly perceived to be an effective qualification standard or a flexible tool to be adapted to suit individual command's qualification requirements. PQS implementation is too inconsistent for it to be strongly perceived as a sufficient qualification standard while its implementation is not sufficiently flexible to be strongly perceived as effectively supporting the individual command's qualification requirements.

Survey results indicate that an exam could set an adequate qualification standard. Results also indicate its perceived sufficiency as a qualification standard was not significantly different than that observed for PQS.

However, results show that respondents did not perceive either exam structure to be an adequate implementation for the exam proposal. The critical issue in the establishment of adequate qualification standards is implementation and not whether an exam or existing policy is the best format.

The recommendations which follow are based solely on conclusions drawn from the analysis of the sampled officers' perceptions concerning the issues examined.

The restructured SWO career path, the goal of which was to enhance readiness through the specialization of department heads, was strongly endorsed by respondents. However, policy makers need to re-evaluate assumptions concerning the role of professional skills and competencies. In particular, policy emphasizing increased tactical and watchstanding skills in the evaluation of department head performance may yield significant readiness returns, and would not be dependent on the ability of the detailing system to support its implementation.

Expanding the number of single long tour department head billets available to SWOs may significantly benefit readiness and would be widely accepted within the community. It is recommended that the feasibility of such a policy be studied and appropriate assignment decision aids be identified.

It is recommended that the feasibility of assignment rotation policy designed to ensure department head

continuity throughout the work-up cycle and deployment be evaluated as a replacement to the current fixed time interval department head rotation policy. If it is found to be practical, decision aids should be identified which can effectively support policy implementation.

A review of SWO training and qualification program implementation and requirements is recommended. The focus of the review should be the identification of policy revisions that would better support uniform personal and fleet minimum qualification standards while continuing to allow individual commands some measure of flexibility in establishing qualification requirements. However, community managers can only provide the policy to implement this. It is ultimately the responsibility of the communities officers who must set and maintain the qualification standards they perceive to be necessary.

From this analysis, it is concluded that the incorporation of SWOs' perceptions during policy formulation as an input to decision making may yield more effective policy. If officer support of policy is believed to contribute to policy success, then comprehensive systematic analysis of officer perceptions should be required during the formulation of officer career path policies. These analyses need not be complex statistical machinations. However, they must completely address all relevant aspects and alternatives of proposed policy from both the Navy

organizational perspective and from the perspective of the individual SWO. Analyses must also be timely and undertaken early in policy formulation if they are to be more than a postmortem.

APPENDIX A

SWO SURVEY

The following is a copy of the survey released to NPS SWOs.

SECTION A

Questions 1 thru 24 concern your perceptions of SWO specialization. For the purposes of this questionnaire, a specialist is a SWO who feels he has expertise in a specific warfare sub-area of the community over and above all others. For example, if a SWO had served entirely on amphibious ships he might consider himself a specialist or if a SWO had served tours in the operations departments on a CG, an LHA and an FF he might consider himself an operations specialist. A generalist would consider himself, more or less, equally proficient in all warfare areas of the community. Specialist, here, does not pertain to any "sub-specialty" or "p-code" related aspects of the Navy.

For questions 1 thru 3 please mark only one response for each question.

1. Which statement most applies to you?
   - __ I consider myself a SWO, first and foremost.
   - __ I am primarily a SWO and secondarily a Naval Officer
   - __ I am an equal balance of both.
   - __ I am primarily a Naval Officer and secondarily a SWO.
   - __ I consider myself a Naval Officer, first and foremost.

2. Generally, you would classify yourself as a/an:
   - __ Amphibious specialist
   - __ CLF specialist
   - __ CG/DD/FF specialist
   - __ Strictly a generalist

   Other _____

3. Generally, you would classify yourself as a/an:
   - __ Operations specialist
   - __ Combat systems/Weapons specialist
   - __ Engineer
   - __ Strictly a generalist
   - __ Deck specialist

   Other _____

---

4. Indicate the degree of expertise and the level of experience you feel you possess in each of the following areas. Respond to all blocks of each question using the following 7 point scale:

1	2	3	4	5	6	7
very weak			moderate			very strong

	Degree of Expertise	Level of Experience
A. Warfare:		
Amphibious	___	___
Combat logistics	___	___
AAW/ASW/ASUW	___	___
other_____	___	___
B. Departmental:		
Operations	___	___
Combat Systems/Weapons	___	___
Engineering	___	___
Deck	___	___

5. In reference to your past operational sea assignments, evaluate the influence and accuracy each of the following information sources had on your decision to seek or accept those assignments. Respond using the following 7 point scale:

0	1	2	3	4	5	6	7
NA	very low			moderate			very high

			(check the direction of influence)	
	influence	accuracy	positive	negative
CO	___	___	___	___
XO	___	___	___	___
Dept. Head	___	___	___	___
Professional publications	___	___	___	___
Peers	___	___	___	___
Detailer	___	___	___	___
Other_____	___	___	___	___

6. Rate the following SWO specialization approaches. First evaluate them according to your personal career aspirations and then assess them in relation to their benefit to the Navy. Respond to all blocks for each question using the following 7 point scale:

1	2	3	4	5	6	7
strongly negative			neutral			strongly positive

	career goals	benefit to the Navy
A. Specialization by department incorporating Ops, Combat Syst., and Engineering as the specialty tracks.	___	___
B. Specialization by warfare area incorporating Amphibs/CLF/Mine Warfare as one track and ASW/ASUW/AAW as the second.	___	___
C. Specialization in which engineers and material specialists would have a separate career path without the opportunity for command at sea but could obtain equivalent advancement and promotion through an expanded EDO program. All other SWO's would follow the traditional career path through command at sea.	___	___

For questions 7 thru 9 respond to each block of each question using the following 7 point scale:

1	2	3	4	5	6	7
strongly disagree			uncertain			strongly agree

7. ___ The best CO's and XO's are generalists rather than specialists.

8. ___ A SWO must become a technical expert in a warfare area (weapons, operations, engineering etc.) to be successful in today's Navy.

1	2	3	4	5	6	7
strongly disagree			uncertain			strongly agree

9. If specialization were a policy requirement, the SWO should declare his "track" intention (respond to each):
   __ at the completion of his first division officer tour.
   __ at the completion of his second division officer tour.
   __ prior to department head school.
   __ at the time he receives his warfare device.

Rate the following assignments. First rate them according to your perception of their contribution to a successful SWO career then assess the desirability of each. Respond to all blocks of each question using the following 7 point scale:

1	2	3	4	5	6	7
strongly negative			neutral			strongly positive

	SWO career contribution	desirability
10. Department Head		
a. chief engineer	___	___
b. combat systems officer	___	___
c. weapons officer	___	___
d. first Lt. amphibious	___	___
e. first Lt. CLF	___	___
f. ops officer amphibious	___	___
g. ops officer DD/FF/CG	___	___
h. ship control officer	___	___
i. weapons control officer	___	___
j. squadron staff	___	___
11. flag aide	___	___
12. instructor training command	___	___
13. instructor USNA/ROTC	___	___
14. CRU-DES-GRU staff	___	___
15. PG school	___	___
16. major shore staff	___	___
17. recruiting	___	___
18. Washington D.C.tour	___	___
19. sub-specialty tour	___	___
20. joint tour	___	___
21. war/staff college	___	___
22. detailer	___	___
23. FTG observer	___	___
24. MTT observer	___	___

SECTION B

This section, questions 25 thru 30, concerns a few aspects of readiness. Readiness is a word with many connotations. For the purposes of this survey the following terms are defined:

combat readiness - the degree to which a ship is capable of performing it's combat missions

material readiness - the levels to which a ship's systems, equipment and material status will allow it to perform its designated missions

fleet readiness - the degree to which an organizational unit of ships and attached assets possesses the capability to complete its designated missions

ship's readiness - the degree to which a ship possesses both combat and material readiness

25. Rate the importance of the following SWO professional skills. First evaluate the degree to which they are critical to job performance and then rate them with regard to their contribution to ship's readiness. Respond to each block of each question using the following 7 point scale:

1	2	3	4	5	6	7
very low			moderate			very high

	criticality to job performance	contribution to ship's readiness
A. Division officer:		
leadership skills	___	___
tactical/watchstanding skills	___	___
technical competency	___	___
managerial competency	___	___
B. Department Head:		
leadership skills	___	___
tactical/watchstanding skills	___	___
technical competency	___	___
managerial competency	___	___

For questions 26 thru 30, respond to each block of each question using the following 7 point scale:

1	2	3	4	5	6	7
strongly disagree			undecided			strongly agree

26. Specialization implemented at the first tour department head level would:

__ significantly improve fleetwide readiness.

__ significantly improve ship's material readiness.

__ significantly improve ship's combat readiness.

__ tend to produce CO's without the background, training and experience to effectively command at sea.

__ tend to produce XO's who would be less effective than a strict generalist.

27. Comparing a single 30 month department head tour with the split 18 month tours, the longer single tour would tend to:

__ promote significantly higher levels of material readiness.

__ allow department heads to become better warfighters.

__ subject the department head to greater career risks.

__ promote significantly higher levels of combat readiness.

__ enhance fleetwide readiness.

28. __ Statistics show that aviation officers perceive shore tours that most closely emulate flying sea tours as being the most desirable (top gun, strike u., rag instructor). A similar perception, if it did exist in the SWO community, would serve to improve combat readiness by making training and evaluation command assignments appear most desirable.

1	2	3	4	5	6	7
strongly disagree			undecided			strongly agree

29. Comparing a detailing system that scheduled department head assignment rotation based on ship's schedule versus the present system. For example, department heads would not ordinarily be allowed to rotate between work-up and deployment or while on deployment but would rotate after deployments, during overhaul/SRA and before work-up cycles. The purpose being to provide department head continuity through work-up and deployment.

__ Such a system would tend to significantly increase ship's combat readiness while deployed.

__ For such a system to have any impact on combat readiness, it would have to be expanded beyond just the department head level.

__ It would not affect officer retention because under the present system department heads are not reasonably certain of their rotation dates anyway.

__ Rotation of department heads in the work-up cycle or while on deployment has little effect on readiness during a deployment because readiness is most heavily dependent on other factors.

__ Why change anything, ship's deploy as combat ready as is humanly possible, while changes to the present department head detailing system would just be superfluous.

30. Implementation of Standard Operating Procedures (much like EOSS) if standardized, properly technically supported and subject to off ship review and inspection would significantly increase the effectiveness of ships in the following areas:

__ CIC/bridge team proficiency

__ AAW proficiency

__ ASW proficiency

__ ASUW proficiency

__ amphibious assault proficiency

_____ other

SECTION C

Questions 31 thru 39 concern your perceptions of a few aspects of SWO qualification.

For questions 31 thru 39 respond to each block of each question using the following 7 point scale:

1	2	3	4	5	6	7
strongly disagree			uncertain			strongly agree

31. Indicate how you feel toward the methods now used to qualify SWO's for their warfare device. The system is defined as being composed of PQS, close observation and oral boards.

    __ The methods now used are quite adequate with regard to the minimum criteria you believe the fleet requires.

    __ The present methods are unsatisfactory because their appears to be no standardization in the level of performance or expertise required to obtain SWO qualification.

    __ Oral boards are the best reasonable test of a SWO's expertise, experience and ability to think on his feet.

    __ Fleetwide standardization of requirements for SWO is not a relevant issue.

32. __ Shipboard experience is the cornerstone of the SWO qualification system above all else.

33. __ It is the responsibility of a ship's CO to train SWO's to be warriors above all else.

34. __ The Navy should be as dedicated to SWO warfare training as it is to damage control, material readiness, enlisted training, etc.

35. __ It is primarily the individual responsibility of a SWO to not only do his job but also prepare himself to be a warrior.

36. __ The SWO qualification is a personal goal for every SWO according to his own faculties and should not be relegated to the programmed lock step mode characteristic of other ship's training programs.

1	2	3	4	5	6	7
strongly disagree			uncertain			strongly agree

37. The real value of SWO PQS is that (respond to each block),

__ it is, primarily, a learning tool the prospective SWO uses to gain basic warfare background experience.

__ it sufficiently standardizes, fleetwide, the minimum level of warfare qualification required of a SWO.

__ it is, primarily, a flexible tool which individual commands adapt to suit their SWO qualification requirements.

__ it, primarily, provides documentation to chart SWO qualification progress.

__ it serves little value in relation to that gained through actual watchstanding and operational experience.

other _____

38. Concerning a requirement for SWO's to obtain an EOOW letter before their XO tour,

__ I would not support the policy because I feel it would not significantly contribute to command skills.

__ I would not support the policy because I feel the opportunity to fulfill the requirement is too limited for all SWO's to properly attain.

__ I would fully support the policy and believe it should be a demanding qualification that is strictly enforced.

__ I would support the policy but feel waivers should be available to those with adequate justification.

other _____

1	2	3	4	5	6	7
strongly disagree			uncertain			strongly agree

39. Some SWO's believe that a fleetwide SWO exam should be administered as an additional requirement for warfare qualification. Under this proposal, a prospective SWO would only be allowed to take the exam with his CO's permission and only after meeting any other requirements his CO may have.

__ Such an exam would serve to set a fleetwide minimum standard for SWO qualification.

__ Such an exam would be a waste of time and resources because the variety of missions, platforms, and subject areas could not possibly be adequately examined in a standardized exam.

__ Such an exam would be very beneficial to the community and the Navy if it were administered in multiple versions which accounted for the variety of platforms and mission areas.

__ Any form of a written exam would unfairly discriminate against outstanding SWO's who are just not good test takers.

__ Such an exam, if focused on warfare skills, tactics, systems and capabilities while covering only the basics of engineering, damage control, administration and repair could be universally applied fleetwide regardless of the prospective SWO's background.

SECTION D

Questions 40 thru 52 request background data. It is critical to the statistical analysis of this survey that the demographics of the sample group be ascertained. Your anonymity will be strictly maintained. However, if you do not feel comfortable responding to one or more of the questions in this section, please leave them blank.

For questions 40 thru 45, check only one response per question.

40. What is your rank?
__LTjg __CDR
__LT __CAPT
__LCDR

41. How many years have you been an active duty officer?
__ Less than 4 __ 9
__ 4-6 __ 10
__ 7 __ 11-12
__ 8 __ 13-14
__ More than 14

42. Marital status:
__ married __ divorced
__ separated __ never married

_____ other

43. Generally speaking your fitness reports are in the:
__ Top 1% and recommended for accelerated promotion
__ Top 1%
__ Top 5%
__ Top 10%
__ Top 30%
__ Top 50%
__ Bottom 50%

44. As a division officer, I have served on the following ship types (check all that apply).
__ DD/FF/FFG/DDG
__ CG
__ CV
__ AOE/AOR/AFS/AE/AO
__ LHA/LPH
__ LSD/LPD/LKA/LST
__ MSO/ASR/ARS/PHM
other _____

45. As a department head, I have served on the following ship types (check all that apply).
__ DD/FF/FFG/DDG
__ CG
__ CV
__ AOE/AOR/AFS/AE/AO
__ not applicable
__ LHA/LPH
__ LSD/LPD/LKA/LST
__ MSO/ASR/ARS/PHM
other _____

46. Indicate the ship type you have served on as a CO and/or XO.

XO _____

CO _____

not applicable ____

47. My last sea assignment was?

__ CO
__ Dept. Head
__ Afloat staff
__ Principal assistant
__ Squadron staff
__ XO
__ Div. off.
Other _____

48. Are you a qualified Engineering Officer of the Watch (EOOW)?

__ Yes
__ No

49. Are you a "by letter" qualified Tactical Action Officer?

__ Yes
__ No, but I have regularly stood the watch
__ No

50. Which of the following has the most influence on your choices of sea assignments?

__ Homeport
__ Billet
__ Ship type

51. What significant non-operational billets have you been assigned to in the past? (check all that apply).

__ PG school
__ Flag aide (ashore)
__ Instructor
__ Washington D.C. tour
__ Recruiter
__ Staff

others _____

52. In addition to SWO, what other qualifications have you obtained? (check all that apply).

__ Surface command qualification

Others _____

APPENDIX B

APPLICABLE ITEM RESULTS

7. __ The best CO's and XO's are generalists rather than specialists.

Count	Value	One symbol equals approximately 1.00 occurrence
9	1.00	*********
21	2.00	*********************
23	3.00	***********************
13	4.00	*************
23	5.00	***********************
50	6.00	**
14	7.00	**************

I.....I.....I.....I.....I.....I
0 10 20 30 40 50
Histogram frequency

Mean	4.477	Std err	.147	Median	5.000
Std dev	1.818				

8. __ A SWO must become a technical expert in a warfare area (weapons, operations, engineering etc.) to be successful in today's Navy.

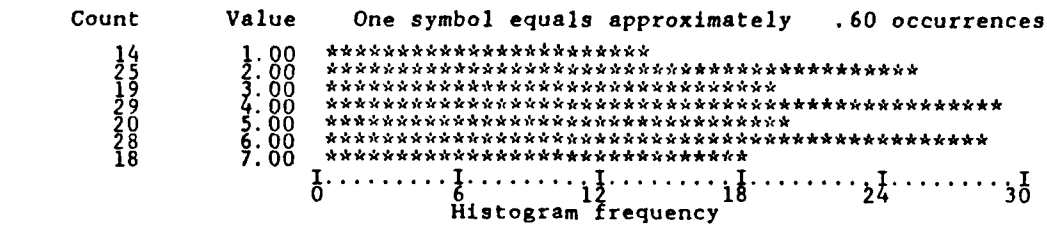
Count	Value	One symbol equals approximately .80 occurrences
3	1.00	****
9	2.00	**********
10	3.00	**********
25	4.00	*********************************
29	5.00	**************************************
37	6.00	**
40	7.00	**

I.....I.....I.....I.....I.....I
0 8 16 24 32 40
Histogram frequency

Mean	5.216	Std err	.128	Median	6.000
Std dev	1.589				

26. Specialization implemented at the first tour department head level would:

__ tend to produce CO's without the background, training and experience to effectively command at sea.

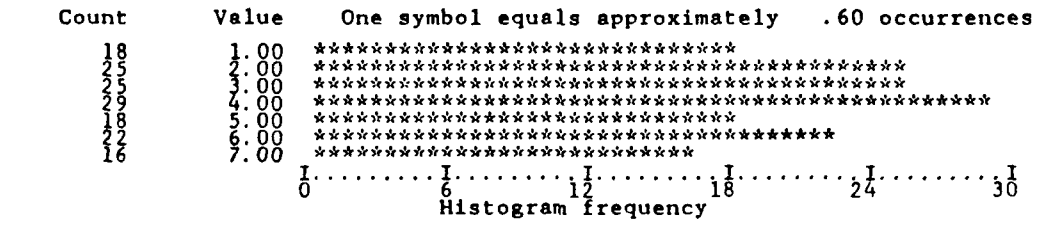


Count	Value	One symbol equals approximately .60 occurrences
14	1.00	**********
25	2.00	**********
19	3.00	**********
29	4.00	**********
20	5.00	**********
28	6.00	**********
18	7.00	**********

I.....I.....I.....I.....I.....I
0 6 12 18 24 30
Histogram frequency

Mean	4.124	Std err	.152	Median	4.000
Std dev	1.879				

__ tend to produce XO's who would be less effective than a strict generalist.



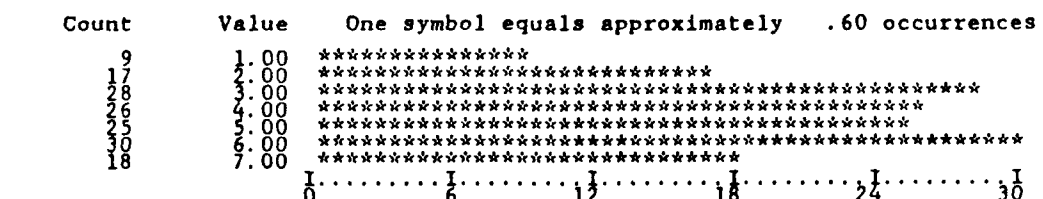
Count	Value	One symbol equals approximately .60 occurrences
18	1.00	**********
25	2.00	**********
25	3.00	**********
29	4.00	**********
18	5.00	**********
22	6.00	**********
16	7.00	**********

I.....I.....I.....I.....I.....I
0 6 12 18 24 30
Histogram frequency

Mean	3.876	Std err	.152	Median	4.000
Std dev	1.875				

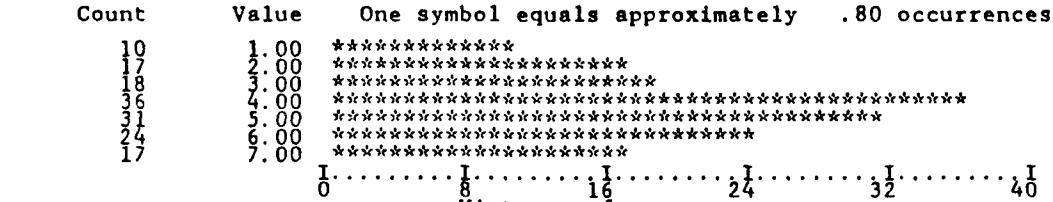
27. Comparing a single 30 month department head tour with the split 18 month tours, the longer single tour would tend to:

__ allow department heads to become better warfighters.



Mean 4.327 Std err .142 Median 4.000
Std dev 1.754

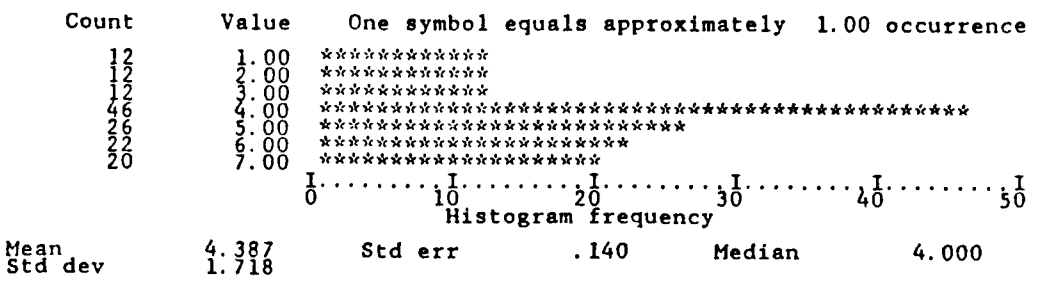
__ subject the department head to greater career risks.



Mean 4.314 Std err .138 Median 4.000
Std dev 1.703

29. Comparing a detailing system that scheduled department head assignment rotation based on ship's schedule versus the present system. For example, department heads would not ordinarily be allowed to rotate between work-up and deployment or while on deployment but would rotate after deployments, during overhaul/SRA and before work-up cycles. The purpose being to provide department head continuity through work-up and deployment.

__ It would not affect officer retention because under the present system department heads are not reasonably certain of their rotation dates anyway.



Mean	4.387	Std err	.140	Median	4.000
Std dev	1.718				

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